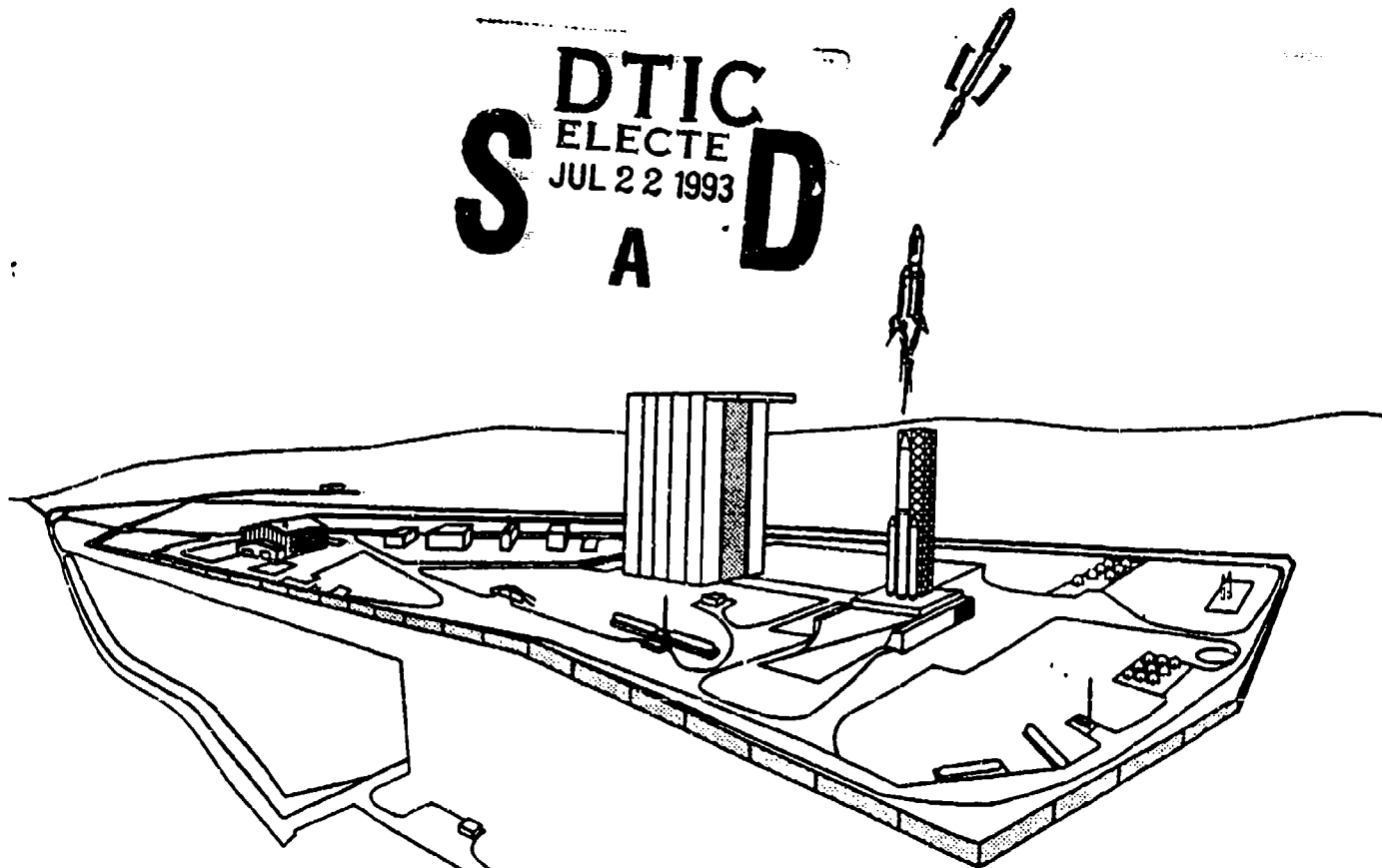


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ENVIRONMENTAL IMPACT ANALYSIS PROCESS



VOLUME III - PRELIMINARY
FINAL ENVIRONMENTAL IMPACT STATEMENT
CONSTRUCTION AND OPERATION OF
SPACE LAUNCH COMPLEX 7

VANDENBERG AIR FORCE BASE, CALIFORNIA
23 OCTOBER 1989

DEPARTMENT OF THE AIR FORCE

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**Air Force
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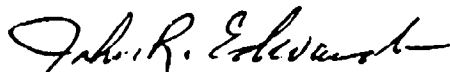
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23 October 89

SUBJECT: *Transmittal Preliminary Final Environmental Impact Statement Space Launch Complex 7
Vandenberg Air Force Base, California*

TO:
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1. The Preliminary Final Environmental Impact Statement (EIS) for the proposed Space Launch Complex 7 (SLC-7) project is attached for your review. This document provides comments to the Draft EIS and responses to those comments.
2. The response to Comment No. 201 (page 2-146) remains to be developed and will be provided to reviewers prior to close of business on October 27, 1989, under separate transmittal.
3. Review comment forms have been enclosed for your use. Due to stringent demands for the issuance of the Candidate Final EIS, the deadline for submitting comments to our office is the close of business on November 10, 1989.
4. Thank you for your assistance in the preparation of this document. Please telephone my office if you have any questions (213) 643-0934 or Autovon 833-0934.


JOHN R. EDWARDS, GS-13
Environmental Engineer
Environmental Planning Division
Directorate of Acquisition Civil Engineering

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Preliminary SLC-7 Final Environmental Impact Statement

Date _____

Vandenberg Air Force Base, California

Reviewer[illegible]

December 22, 1989

TO: ALL INTERESTED GOVERNMENT AGENCIES, PUBLIC GROUPS,
AND INDIVIDUALS

We are pleased to provide you with a copy of the Final EIS, which completes the Environmental Impact Statement (EIS) for the proposed Construction and Operation of the Space Launch Complex 7 at Vandenberg Air Force Base (VAFB), California. The EIS consists of the Draft EIS (Volume I), Appendices to the Draft EIS (Volume II) and, enclosed, the Final EIS (Volume III). Volume III contains a summary of the Draft EIS, comments on the Draft EIS, responses to those comments, addenda and errata to the Draft EIS, and documentation of the Draft EIS public hearings. The document is provided in compliance with the National Environmental Policy Act as implemented by the Regulations of the President's Council on Environmental Quality (40 CFR Parts 1500-1508).

The EIS addresses the construction and operation of a new or modified space launch complex for the Titan IV/Centaur space launch vehicle at VAFB. The proposed facility represents the latest modification to the Titan program, and is a continuation of the space launch program at this Santa Barbara County base. Alternatives to the proposed action considered in detail are the development and operation of the facility at three other sites on South VAFB. Two of these sites are undeveloped, and the third is the existing Space Launch Complex 6, currently configured to support launches of the Space Shuttle.

The final decision on the proposed project will be made following a thirty day period beginning on January 5, 1990 with the Federal Register publication of the Notice of Availability of the Final EIS.

If further information is required, please contact:

HQ Space Systems Division
P.O. Box 92960
Worldway Postal Center
Los Angeles, CA 90009-2960
ATTN: Mr. John Edwards
Telephone (213) 643-0934

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GARY D. VEST

Deputy Assistant Secretary of the Air Force
(Environment, Safety and Occupational Health)

1 Attachment
Final EIS, Volume III

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COVER SHEET

- (a) Responsible Agency: U.S. Air Force
- (b) Proposed Action: Construction and operation of Space Launch Complex 7 (SLC-7) on South Vandenberg Air Force Base (VAFB), California. The facility would provide for processing and launch of the Titan IV/Centaur, an unmanned space vehicle: (1) to support requirements for timely and reliable launch of critical Department of Defense (DOD) satellites from a location where highly inclined and polar orbits can be safely achieved, (2) to provide capability to launch payloads in the 10,000 pound class to high energy, inclined orbits, and (3) to maintain assured access to space by providing backup launch capability for the Titan IV/NUS (No Upper Stage).
- (c) Responsible Individual: Mr. John Edwards
HQ SSD/DEV
P.O. Box 92960
Los Angeles, California 90009-2960
Phone: (213) 643-0934
- (d) Designation: Final Environmental Impact Statement (Final EIS)
- (e) Abstract: This Final EIS addresses the construction and operation of the proposed SLC-7 project at Cypress Ridge on South VAFB, California, to provide for processing and launch of the Titan IV/Centaur, an unmanned space launch vehicle, capable of launching payloads in the 10,000-pound class into high energy, near polar orbits.

Alternatives to the proposed action include other launch vehicles, specifically the Space Shuttle, Titan IV/NUS, and Titan 34D, and alternate launch locations in Florida, the South Pacific, and on VAFB.

Primary impacts to the physical environment of South VAFB involve soil and vegetation loss during construction, ground water consumption during operations, and effects of sonic boom on Channel Islands wildlife during launches. Primary impacts to the human environment of north Santa Barbara County relate to the potential for a maximum of 550 employment opportunities during project construction and 400 during operations. The primary regional effects of temporary and permanent increases in population would be increases in economic activity and in demands on public services and facilities. Other impacts would include the visual effect of the space launch complex on the near coastal region and the potential closure of Jalama Beach County Park during launch events. Potential impacts to health and safety also would occur, related to the fuels utilized.

Impacts to the environment from implementation of the proposed project at the Vina Terrace or Boathouse Flats alternative sites would be similar to those for the proposed action. For most environmental considerations, impacts from implementation at the SLC-6 site would be substantially less.

- (f) Released to the public December 22, 1989.

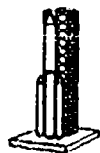


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SUMMARY OF DRAFT EIS

SUMMARY OF DRAFT EIS

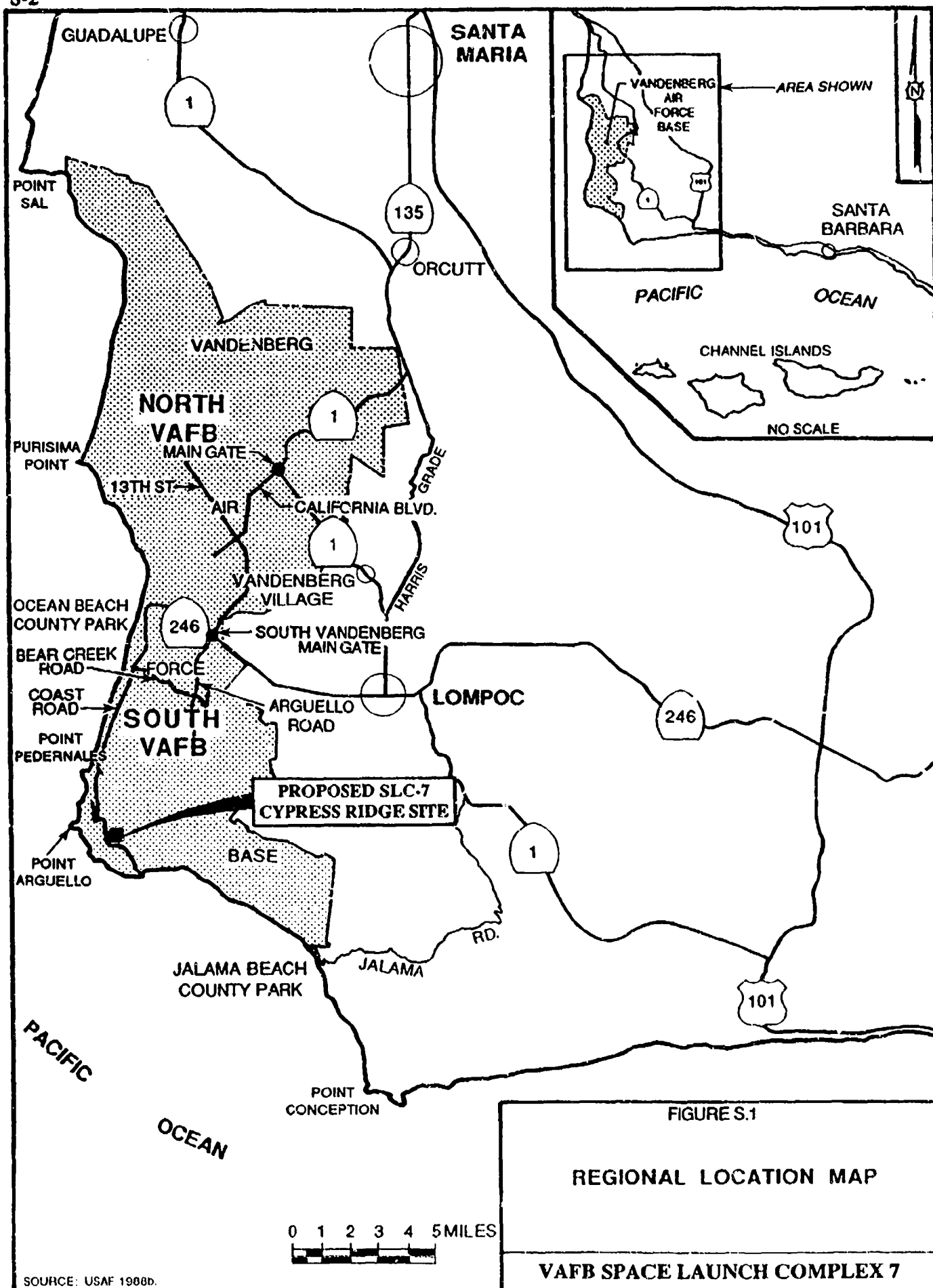
Consistent with the President's Council on Environmental Quality (CEQ) regulations, this Final Environmental Impact Statement (EIS) does not reprint the Draft EIS since changes are minor. This summary of the Draft EIS is provided for ease of reference.

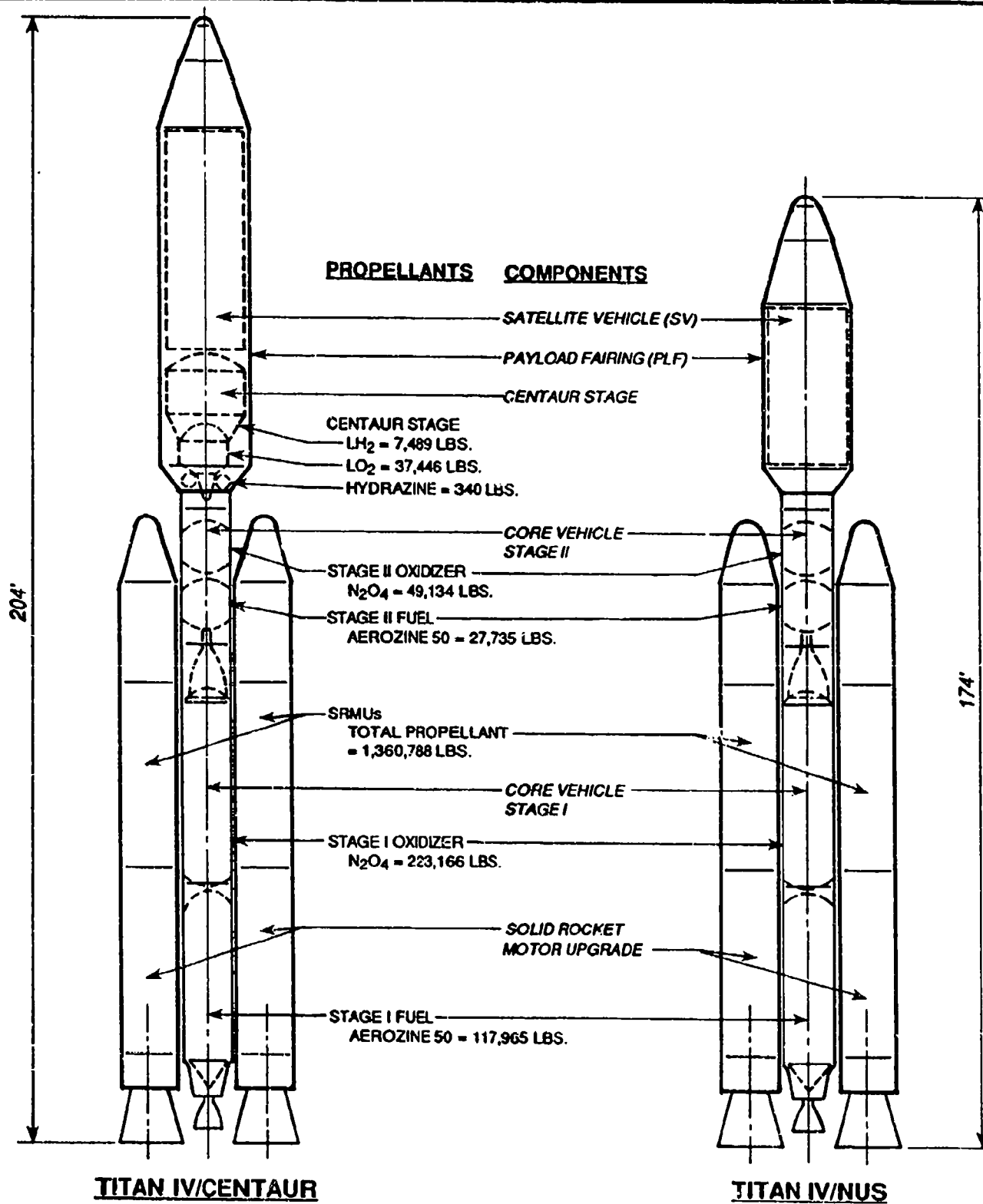
PROPOSED ACTION AND ALTERNATIVES

The proposed action is the construction and operation of a Titan IV/Centaur space launch complex in support of the Department of Defense (DOD) space program. The project is designed for a minimum of 25 years, with construction planned to begin in 1991, followed by operations in 1994 or 1995. Known as Space Launch Complex 7 (SLC-7), the project would be located on South Vandenberg Air Force Base (VAFB), California (see Figure S.1, Regional Location Map). The Titan IV/Centaur is an unmanned, expendable launch vehicle capable of launching critical DOD payloads in the 10,000-pound class to high energy orbits. The proposed facility at VAFB would support requirements for timely launches of these payloads from a location where highly inclined and polar orbits can be safely achieved. This action would maintain assured access to space by providing backup launch capability for the Titan IV/Centaur and Titan IV/NUS vehicles. Diagrams of the two launch vehicles are shown in Figure S.2 (Titan IV Vehicle Configurations).

The SLC-7 facility would be a fenced area of about 50 acres, within which the major preparation and launch activities would occur. Some related activities, including launch control and core vehicle and satellite processing, would occur at existing facilities on VAFB that operate in support of Scout, Titan II, and other Titan IV programs. The primary elements of the SLC-7 project, to be constructed and operated onsite, would be the vehicle launch support structure/flame duct, launch mount, umbilical tower, and mobile service tower. These are shown in Figure S.3 (Conceptual Drawing, Cypress Ridge Site and Facilities). There also would be an operations support building, access roads and parking, fuel storage, and security and fire protection systems. Offsite facilities include water storage tank(s), sewage treatment plant, evaporation/percolation ponds, electrical substation, and communications and utility corridors.

It is expected that project construction would occur over a four-year period, with personnel generally ranging from about 100 to 425, increasing to about 550 during peak construction. During project operations, employment would average 300 persons, with pre-launch peaks to 400.



**LEGEND**

LH_2 - LIQUID HYDROGEN
 LO_2 - LIQUID OXYGEN
 N_2O_4 - NITROGEN TETROXIDE
 AEROZINE - 50% HYDRAZINE, 50% UDMH

FIGURE S.2

**TITAN IV
VEHICLE CONFIGURATIONS**

VAFB SPACE LAUNCH COMPLEX 7

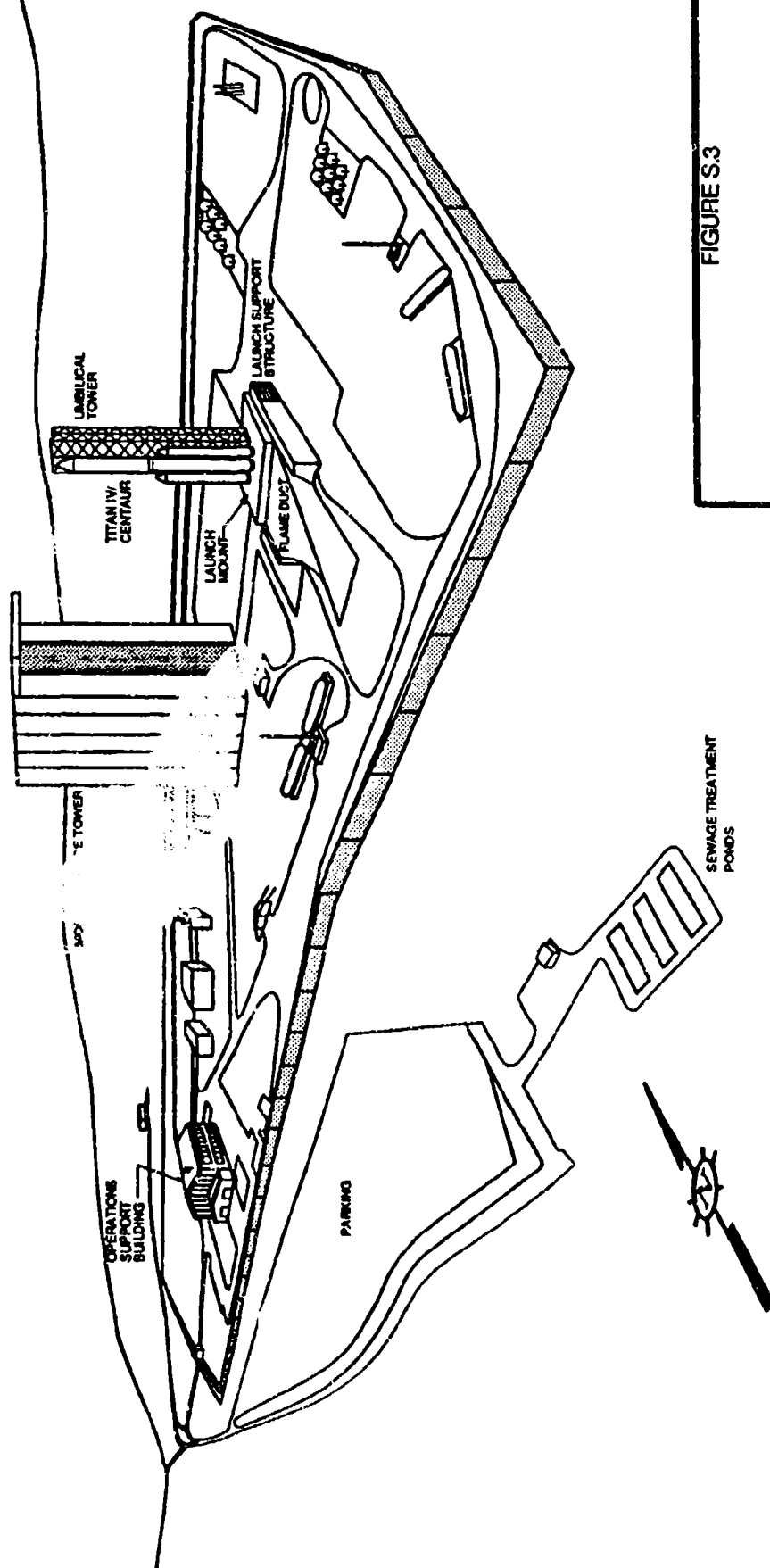


FIGURE S.3

CONCEPTUAL DRAWING CYPRESS RIDGE SITE AND FACILITIES

VAFB SPACE LAUNCH COMPLEX 7

NOTE: ACTUAL PLACEMENT OF FACILITIES
SUBJECT TO USAF CRITERIA AND
FINAL DESIGN CONSIDERATIONS.

SOURCE: USAF 1986d.

Alternatives to the proposed action were evaluated. Other launch vehicles, including the Space Shuttle, were considered but determined not to be viable, based on lack of availability or inability to achieve required orbits. Alternative locations were evaluated. Cape Canaveral Air Force Station (AFS) was rejected because of its inability to safely attain polar orbits. Other sites remote to VAFB were eliminated from further consideration due to location and/or the absence of necessary infrastructure.

The no action alternative was also evaluated and determined not to be a viable solution to Department of Defense requirements (DOD). Use of existing facilities neither supports the requirement for timely launch of critical DOD satellites nor provides the backup capability (i.e., for launches from Cape Canaveral AFS and SLC-4 East) which experience demonstrates is necessary for assured access to space.

From the range of alternatives considered, it was determined that the development of Titan IV/Centaur launch facilities at South VAFB would present the most reasonable course of action, according to mission requirements, technical needs and cost, engineering, and design considerations. Based on siting factors and mission requirements, one proposed site, Cypress Ridge, and three alternative sites, SLC-6, Boathouse Flats, and Vina Terrace, were identified for detailed consideration. The four sites are located as shown in Figure S.4 (Proposed Cypress Ridge Site and Alternatives). The proposed Cypress Ridge and the alternative Boathouse Flats and Vina Terrace sites are undeveloped and located on South VAFB near the southern boundary of the base. The alternative SLC-6 site lies to the north of the other three, but also is located on South VAFB. SLC-6 was modified to support the Space Shuttle, and is currently in caretaker status.

PURPOSE OF AND NEED FOR THE PROPOSED ACTION

The purpose of the proposed Titan IV/Centaur SLC-7 at VAFB would be to fulfill these needs: (1) support timely and reliable launch of critical DOD satellites from a location from which highly inclined and polar orbits can be safely achieved, (2) provide capability to launch payloads in the 10,000-pound class to high energy, inclined orbits, and (3) maintain assured access to space by providing backup launch capability for the Titan IV/Centaur and Titan IV/NUS space launch vehicles.

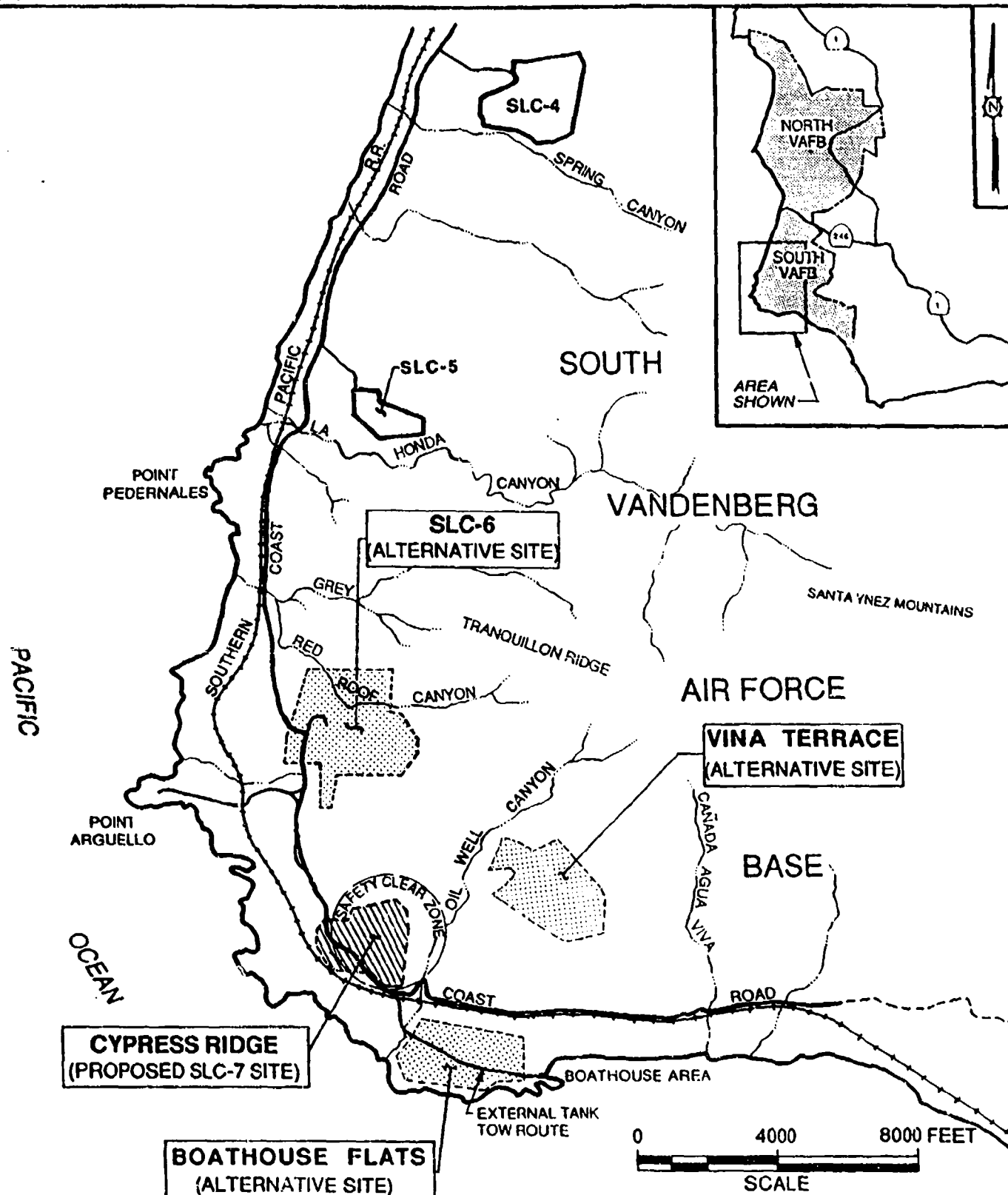


FIGURE S.4

PROPOSED CYPRESS RIDGE SITE
AND ALTERNATIVES

VAFB SPACE LAUNCH COMPLEX 7

The Titan IV/Centaur configuration requires a specific launch pad design with associated support facilities. These facilities exist at Cape Canaveral AFS in Florida. Launches from Cape Canaveral, however, are constrained to easterly launch azimuths between 35 and 120 degrees. Consequently, polar orbits cannot be safely achieved.

The Pacific coast location of VAFB permits space launch azimuths of 150 to 210 degrees, allowing polar and other high inclination orbits. These orbits provide coverage perpendicular to the equator of the entire planet, as required for defense, weather and earth resources surveillance, communications relay, navigational systems, and other scientific purposes. Another important type of high inclination mission is the sun-synchronous mission where the satellite orbit maintains its initial orientation relative to the sun.

ENVIRONMENTAL SETTING

The proposed site and the three alternatives considered in detail are located within the same general area of South VAFB. Therefore, the characteristics of the existing environmental setting are generally the same for the four sites. The primary differences relate to topography and existing development. The Boathouse Flats alternative is located on a relatively flat plain atop a coastal bluff adjacent to the Pacific Ocean of an elevation of approximately 50 feet. The Vina Terrace alternative is situated along a ridge line at an elevation of about 800 feet. The proposed Cypress Ridge site is intermediate between the two in terms of location and physical conditions. The SLC-6 alternative is located on an elevated marine terrace about one mile north of the Cypress Ridge site. Unlike the other three sites, SLC-6 has been extensively developed with structures and facilities designed to support launches of the Space Shuttle.

The project area is within one mile of the Pacific Ocean at the western-most termination of the Santa Ynez Mountains and is underlain by bedrock of the Monterey Formation. Several potentially active faults are known to exist within 60 miles of this area. Surface water resources in the vicinity are limited, consisting primarily of several perennial and ephemeral streams that drain directly into the ocean. Potable water is provided from the nearby Lompoc Terrace aquifer, as no appreciable ground water supply has been found in the vicinity of the four sites. The area is generally arid, with average annual precipitation of about 16 inches per year, occurring primarily between November and April. Stream flow depends mainly on rainfall, with relatively high yields during periods of precipitation due to the steep local topography.

The climate is Mediterranean. During summers, the area is characterized by persistent night and morning low cloudiness and fog and also is subject to Santa Ana wind conditions, when strong, gusty, warm and dry winds blow westward from the inland desert. The air quality is generally good, with the exception of infrequent occasions when ozone exceeds ambient air quality standards. These occur primarily when meteorological conditions are such that pollutants generated in the Los Angeles basin are transported northwest to the area.

The proposed project area is located within an ecological boundary region between coastal southern and central California provinces. At the southern end of the Coast Ranges and western end of the Transverse Ranges, the area contains a number of vegetation and animal species that have reached their northern, southern, or western limits and, for this reason, is an area of ecological and biogeographical interest. Much of the local vegetation has been modified or disturbed by humans over the past century. In general, the proposed project area is vegetated with central coastal scrub, ruderal vegetation, riparian scrub, and small wetlands. In some areas, individuals of the Federal Category 2 candidate species curly-leaved monardella (*Monardella undulata* var. *frutescens*) occur. Other special interest plants in the project area include large-leaved wallflower, western dichondra, and fiddleneck.

Because of its coastal orientation, the project impact area contains both terrestrial and marine animals. In general, the wildlife community tends to be composed of common, wide-ranging reptile, amphibian, mammal, and bird species that tend to frequent a variety of habitat types found throughout the region. Active sign of badger (*Taxides taxus*), a regionally rare mammal, was observed on the site during 1988 field inventories. Mountain lion (*Felis concolor*), a protected species in the state of California, may be expected to occur in the vicinity. Six species of birds that are federal- or state-listed or federal candidate species are known or expected to occur in the vicinity: California brown pelican, ferruginous hawk, American peregrine falcon, California least tern, Western snowy plover, and long-billed curlew. The unarmored three-spine stickleback, a federal- and state-listed endangered species, has been introduced into Honda Creek, about two miles north of SLC-6 and about three miles north of the Cypress Ridge, Boathouse Flats, and Vina Terrace sites.

The northern (Santa Barbara) Channel Islands are included in the study region because they occur beneath the space vehicle overflight area and could experience launch-related impacts, primarily from sonic booms. The northern Channel Islands contain a relatively depauperate animal population composed of species that are common and widespread along the mainland. The island fox, a state-listed threatened species, occurs on the largest islands. Within the marine region of the

project area are several haul-out areas for harbor seals, California sea lions, and occasional elephant and Northern fur seals. Harbor seals are the only known pinniped species to use these hauling grounds as rookeries in the spring.

The visual environment in the vicinity of South VAFB is varied, characterized by rolling hills, valleys utilized for agriculture and grazing, urbanization of the nearby Lompoc Valley, and the VAFB launch complexes and support structures. Topography is dominated by the east-west trending Santa Ynez Mountains, which narrow near the coast and terminate in the project area. The Cypress Ridge site is at the western extreme of these mountains and slopes toward the south onto an elevated marine terrace. It is within an area of considerable archaeological interest, with previously recorded archaeological sites within the project area and other sites determined as a result of the inventory completed for the Draft EIS. One of these, first recorded in 1974, occupies a large portion of the Cypress Ridge site and, with three others, is part of the Oil Well Canyon site cluster, determined eligible for inclusion in the National Register of Historic Places.

The primary socioeconomic area of influence is the North County region of Santa Barbara County, north of the Santa Ynez Mountains. Generally, North County employment is concentrated in agriculture, manufacturing, and government. VAFB is a major economic force in this area, estimated to provide about two-thirds of local job opportunities. Santa Barbara County had an estimated 1988 population of 345,000, with 32,300 in Lompoc, 53,000 in Santa Maria, and about 8,000 at VAFB. The North County is a growing area, in response to employment opportunities related to VAFB, the oil and gas industry, and as a bedroom community to the City of Santa Barbara. Both temporary and permanent housing are available, as are public services and utilities.

The proposed project area, like the surrounding region, is primarily undeveloped and rural, and sound levels measured for most of the region are low, with average background CNEL levels of about 40 to 45 dBA. Higher levels occur in industrial areas and along transportation corridors. Land use both in the county and in the vicinity of VAFB consists primarily of agriculture/grazing and other undeveloped uses, and a few urban areas, primarily the cities of Lompoc and Santa Maria. Land use on VAFB is primarily (97 percent) open space. Developed public recreation in the vicinity of the proposed project area is limited and consists of Jalama Beach County Park, south of VAFB, and Ocean Beach County Park, at the mouth of the Santa Ynez River.

The transportation system in the proposed project region consists of the highways in the vicinity of Lompoc and VAFB and surface streets within the city of Lompoc. The main transportation routes

in the area connect with Highway 101, the primary north-south transportation corridor in the region. Access to VAFB and the project area is provided by four gates and paved roadways through the base. In general, there is little traffic on South VAFB roads.

IMPACTS AND MITIGATION MEASURES

There are potential impacts to the natural and human environments that could result from implementation of the proposed action. Many of these would be minor, and most would be minimized through project design and/or application of existing state, federal, and USAF rules and regulations, and/or mitigation measures. Potential impacts to the natural environment are related to geology and soils, vegetation, wildlife, water resources, air quality, noise, and cultural and visual resources. Potential impacts to the human environment are related to waste management, health and safety, socioeconomics, transportation, land use, and recreation.

At the proposed Cypress Ridge and alternative Boathouse Flats and Vina Terrace sites, geology and soils impacts would occur primarily during the four-year project construction period, especially during grading activities, with soil loss on the order of 4,000 tons per year anticipated. This would be mitigated to the extent possible by erosion control measures during construction. Implementation of the proposed action at SLC-6 would minimize soil loss, since no grading or excavation activities are anticipated. Other potential impacts to all of the sites, such as from earthquakes and slope failure, would be minimized through project design.

Vegetation would be lost as a result of the proposed action. The amount lost would depend on which site is chosen, with a potential loss of 120 to 150 acres at the three undeveloped sites. Of the undeveloped sites, about 50 acres would be permanently disturbed, covered by impervious surfaces. No additional disturbance is anticipated at SLC-6, as the launch complex is already developed, and no grading or excavation is anticipated. Development at the proposed Cypress Ridge site would result in the loss of about 800 to 1,000 mature individuals of the Federal Category 2 candidate species curly-leaved monardella (*Monardella undulata* var. *frutescens*). This impact would not be significant on a regional level due to the size of regional populations.

Wildlife populations would decrease or be displaced due to loss of habitat, resulting primarily from grading activities at the proposed Cypress Ridge and alternative Boathouse Flats and Vina Terrace sites. Implementation of the project at one of these sites would represent a small portion of available open space on South VAFB. These effects would not be significant. Implementation of

the project at SLC-6 would result in a lower level of impact since there would be minimal loss of habitat. Operational effects of launch-related sonic booms are expected to produce minor impacts to Channel Islands wildlife. These impacts would be the same from all four sites.

Local (South VAFB) and regional (Lompoc, Santa Maria) water resources would be affected by ground water withdrawal from direct project construction and operations needs and from domestic use by project construction and operations personnel and their families. Increases in withdrawal from the local aquifer are expected to be about 380 acre-feet per year during the anticipated four-year construction phase at the Cypress Ridge, Boathouse Flats, and Vina Terrace sites and 45 acre-feet per year for operations at all of the sites. Construction at SLC-6 would minimize water consumption, as there would be less demand for water for dust control, the primary use of water during construction. Overall, effects to the local ground water basin from construction are expected to be minor.

The long-term effect to ground water resources from operations could be significant. The projected 17 percent increase in water demand due to project operations could result in an overdraft condition of the local aquifer, a potentially significant effect. Withdrawals from the aquifers supplying water to the regional environment are dependent on the number of project personnel and would, therefore, be the same for all four sites during operations. Regional demand for water would be expected to increase by approximately 305 acre-feet per year, or 0.2 percent over existing rates. The regional aquifers are currently in an overdraft condition. Therefore, the anticipated increase in water use would be significant, based on the long-term operational demand related to the proposed project.

Potential air quality impacts during construction at the Cypress Ridge, Vina Terrace, or Boathouse Flats site would primarily be dust from earth moving operations and would be mitigated by onsite watering. Potential construction impacts would be minimized by implementation of the proposed project at the SLC-6 site, since earth moving activities are not anticipated.

During operations, there would be emissions of fuel and oxidizer vapors, plus combustion products such as CO, SO₂, NO_x, and HCl. These emissions would be minor and infrequent and, therefore, insignificant. The greatest source of emissions would be from vehicle launch, primarily HCl and Al₂O₃ from combustion of the SRMUs, and CO and NO_x from combustion of hypergolic fuels. Standard VAFB launch operational procedures would result in minimum migration of pollutants into inland uncontrolled areas near VAFB. The potential for vehicle failure would produce similar emissions. Studies indicate that the short duration and intermittent nature of

proposed activities would not measurably affect local and regional air quality. It is expected that project-related emissions would result in a small reduction in stratospheric ozone. Impacts to air quality from operations would be the same for the proposed and alternative sites. It is estimated that predicted increases in atmospheric carbon dioxide (CO₂) may result in an increase in global temperatures between the equator and 50 degrees latitude of 0.06 degrees centigrade (C) per year to approximately three degrees C by the year 2030 (Schlesinger and Mitchell 1985). Increases in the polar regions (60 degrees latitude) may be as much as two times greater. If these increases occur, environmental effects could include glacial melting, rising of the oceans, increased urban air pollution and deforestation.

Exhaust products from a single Titan IV launch include approximately 44 tons of CO₂. With three launches per year, about 132 tons of CO₂ would be emitted, resulting in an annual increase of approximately two millionths of one percent of global CO₂ emissions. Based on these emissions, a single Titan IV launch from SLC-7 is estimated to result in a global temperature increase of 0.9×10^{-9} degrees C at 50 degrees latitude, or 1.8×10^{-9} degrees C at 60 degrees latitude. With three launches per year for 25 years, SLC-7 would be expected to contribute to a temperature increase of approximately 1.3×10^{-7} degrees C at 60 degrees latitude (the earth's polar regions). Based on this analysis, the proposed SLC-7 launches are not expected to contribute significantly to global warming.

Noise would occur primarily from normal launch events and result in noise levels of about 100 dBA at Lompoc and 90 dBA at Santa Maria, persisting for about 60 seconds for a maximum of three launches per year. Due to its short duration, such noise would not be significant. Noise impacts would be the same from the proposed and alternative sites.

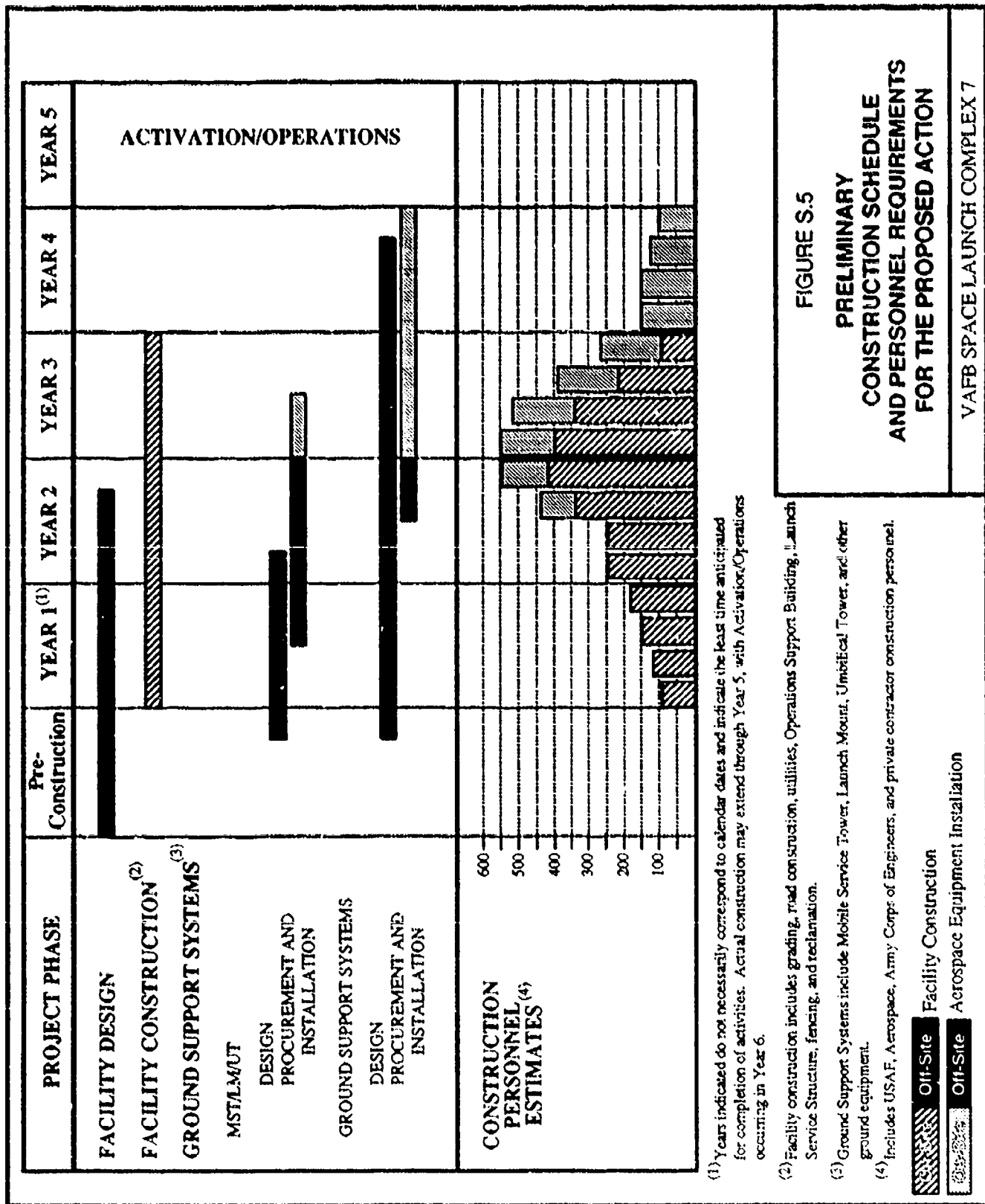
Visual impacts would result from conversion of the Cypress Ridge, Boathouse Flats, or Vina Terrace sites from undeveloped open space to an active, industrial-type use. On a local basis, the proposed action would be a southerly extension of an existing array of space launch complexes and so would not be a unique visual feature. Due to the distances from which it would be viewed and the limited number of persons involved, these impacts are not considered significant.

Implementation of the proposed action at the SLC-6 site would result in the least visual impact since the site has already been fully developed and is part of the viewer's set of existing expectations. Changes made to accommodate the Titan IV/Centaur program at SLC-6 would be visually minimal.

Regional impacts to historic and prehistoric cultural resources are not expected from implementation of the project at the proposed or alternative site. However, the caliche plant fossils on San Miguel Island may be affected by the shock from launch-induced sonic booms, regardless of which alternative is chosen. Within the proposed project vicinity, there could be effects to the historic former U.S. Coast Guard Rescue Station (Boathouse), to archaeological sites which preliminary studies indicate may be eligible for inclusion in the National Register of Historic Places, and to a prehistoric Chumash rock art site. Disturbance to archaeological resources would occur primarily from grading and trenching activities at the Cypress Ridge, Boathouse Flats, and Vina Terrace sites. These potential impacts would be mitigated through avoidance by design, a pre-project data recovery program, and onsite construction monitoring. Implementation of the proposed action at SLC-6 would minimize the potential for impacts to buried archaeological resources since no excavation or earth moving activities are anticipated.

The extent of potential socioeconomic effects would depend on the number of persons who move to the area for the employment opportunities provided by the proposed project, shown in Figure S.5 (Preliminary Construction Schedule and Personnel Requirements for the Proposed Action). This new population would increase demands for housing, public services, and utilities, primarily in Lompoc and Santa Maria. Assuming maximum impacts, population could increase by 1,440 in the North County area during construction at Cypress Ridge, Boathouse Flats, or Vina Terrace, and by 1,470 during operations. Implementation of the proposed action at SLC-6 would result in a smaller population increase during project construction (approximately 790 persons). In general, these impacts are expected to be beneficial to the growing North County area. Accordingly, the beneficial impacts from construction of the proposed project at SLC-6 would be less than if one of the other sites were selected, as fewer construction personnel would be required. Potential transportation impacts to regional streets and highways also would occur as a result of additional construction and operations workers who may move to the area for employment. There also could be delays in entering VAFB due to additional traffic at the Main and South Gates. These impacts would not be significant for implementation of the proposed project at any of the four sites, and no mitigations are proposed.

Land use and recreation impacts would occur as a result of activities being disrupted by launch events from any of the four potential sites. These impacts primarily would be to offshore oil and gas extraction and shoreline and marine recreation. Such interruption would result from Titan IV/Centaur launches a maximum of three times per year and would not be significant. Initial



concerns were that agricultural areas having potential for residential use in areas south of VAFB could be affected by launches from the proposed project. However, in independent action, the USAF is studying the possibility of acquiring real estate interests over potentially affected private lands, thereby minimizing the potential for land use impacts to these areas.

Project implementation would result in the generation of domestic, industrial, and hazardous waste. The generation of domestic wastes during construction would be greater at an undeveloped site, as a greater number of construction personnel would be required there than at SLC-6. Domestic waste during operations would be the same for the four potential sites. It is anticipated that the SLC-6 alternative would produce greater construction debris due to demolition activities. There are storage, treatment, and disposal facilities available on VAFB and in the project region with the capacity to routinely accommodate construction debris and domestic and industrial wastes. Therefore, these wastes would not create a significant impact. It is estimated that 119 tons of hazardous waste per year would be generated due to operations at the proposed and alternative sites and require appropriate treatment or disposal. This would be less than 0.02 percent of the approximately 576,000 tons of hazardous waste disposed of in California in 1987 (CDHS 1989). In addition, it is estimated that implementation of the proposed action at the SLC-6 site would generate an additional 80,000 gallons of hazardous waste due to the necessity to replace hypergolic fuel and oxidizer delivery systems. Disposal of construction and operational waste at an appropriate facility would incrementally shorten the facility's useful life and so is considered adverse. No mitigations for waste management are proposed.

Potential health and safety impacts are related to the possible occurrence of an accident, primarily related to hypergolic propellant transportation/storage and/or transportation and preparation of solid rocket motor upgrade (SRMU) segments. Rupture of hypergolic storage vessels could result in the release of toxic gases and the possibility of explosion. Hypergolic propellants have been shipped to VAFB since 1958, with no major accidents. An SRMU accident could result in ignition of the propellant and subsequent release of HCl, Al_2O_3 , and heat, with subsequent adverse health effects. Impacts related to fuel transport and use are not expected to significantly affect the public, and no mitigation measures are proposed. Some human health impacts may result from the depletion of stratospheric ozone. These impacts would primarily be a small increase in skin cancer rates.

SUMMARY OF MITIGATION MEASURES

Table S.1, Summary of Mitigation Measures, shows the range of activities that would be undertaken to minimize impacts at the proposed and alternative sites. Mitigation measures were developed for the construction and operations phases of the proposed project at the level of detail consistent with project conceptual design. Additional detail about the mitigation measures shown will be developed as project design proceeds and, where appropriate, in consultation with government agencies.

COMPARATIVE ANALYSIS OF PROPOSED ACTION AND ALTERNATIVES

A comparative analysis of the proposed action and alternatives was prepared in compliance with Section 1502.14 of the CEQ guidelines for preparation of an Environmental Impact Statement. The result of this analysis is a summary comparison of potential environmental effects of the proposed action and alternatives, shown in Table S.2 (Comparative Summary of Impacts). The table provides comparisons of potential effects to specific environmental discipline/resource areas and compares these effects among the proposed action and three alternatives. Four symbols are used to indicate the extent of impact, ranging from least impact (indicated by ○), to low intermediate (indicated by ⊗), to high intermediate (indicated by ⊙), to most impact (indicated by ●). An impact that would be the same under more than one alternative is shown as ∅. When two or more of the project alternatives have the same relative impact, they show the same symbol. An example of this comparison is Geology and Soils - Excavation, where the SLC-6 alternative is ○, Boathouse Flats alternative is ⊗, Cypress Ridge ⊙, and Vina Terrace ●. This indicates that, for the SLC-7 project, the SLC-6 site would require the least excavation, and the Vina Terrace site would require the most excavation. The Cypress Ridge site, with a ⊙, would require more excavation than Boathouse Flats ⊗, but less than Vina Terrace.

It should be noted that the comparisons shown in Table S.2 are relative and do not indicate an absolute level or magnitude of impact. Therefore, although the level of effect may be greater at one site than at another, the actual effect on the environment may be minimal or insignificant. Further, the ratings do not provide a mechanism for comparison of effect between categories. Therefore, a ○ in one category could indicate an effect either greater or lesser than a ○ in another category. The symbols provide a mechanism for comparisons within a category. They do not provide sufficient information to compare impacts between categories.

TABLE S.1

SUMMARY OF MITIGATION MEASURES

Page 1 of 6

ENVIRONMENTAL CONSIDERATION	PROJECT SITE MITIGATION			
	CYPRESS RIDGE	SLC-6	BOATHOUSE FLATS	VINA TERRACE
Geology and Soils	<ol style="list-style-type: none"> 1. Incorporate results of geotechnical investigations into facilities design and grading requirements. 2. Locate critical structures away from potential slide planes. 3. Provide surface drainage/erosion control plan for project construction and operations. Include settling basins, energy dissipators, and/or flow dividers. 4. Utilize revegetation to reduce runoff. 	<ol style="list-style-type: none"> 1. Complete erosion control efforts begun east boundary of site. 	<ol style="list-style-type: none"> 1. Same as Cypress Ridge Mitigation Measures 1-4. 	<ol style="list-style-type: none"> 1. Same as Cypress Ridge Mitigation Measures 1-4.
Water Resources	<ol style="list-style-type: none"> 1. During construction, minimize surface runoff by revegetation, construction of temporary drainage devices, and other erosion control measures. 2. After construction, reclaim and revegetate disturbed areas. Establish permanent drainage and erosion control measures, in accordance with the restoration plan. 	<ol style="list-style-type: none"> 1. Same as Cypress Ridge Mitigation Measure 2. 	<ol style="list-style-type: none"> 1. Same as Cypress Ridge Mitigation Measures 1-2. 	<ol style="list-style-type: none"> 1. Same as Cypress Ridge Mitigation Measures 1-2.
Vegetation	<ol style="list-style-type: none"> 1. Provide the opportunity for interested parties to recover specimens of special interest plants prior to construction. 2. Pre-plan construction activities to minimize the extent of disturbed land and avoid wetlands. 3. Limit construction vehicle travel to designated roads and staked areas. 	<ol style="list-style-type: none"> 1. Limit construction to previously disturbed areas. 2. Same as Cypress Ridge Mitigation Measures 5, 6, and 7. 	<ol style="list-style-type: none"> 1. Same as Cypress Ridge Mitigation Measures 1-7. 	<ol style="list-style-type: none"> 1. Same as Cypress Ridge Mitigation Measures 1-7.

TABLE S.1
SUMMARY OF MITIGATION MEASURES

ENVIRONMENTAL CONSIDERATION	PROJECT SITE MITIGATION			
	CYPRESS RIDGE	SLC-5	BOATHOUSE FLATS	VINA TERRACE
Vegetation - (Cont'd.)	<p>4. Stockpile the top six inches of topsoil for revegetation.</p> <p>5. Utilize soil stabilization measures, such as erosion control material, soil cement, and/or gunite, especially on areas of steep slopes or highly erodible soils.</p> <p>6. Appropriate environmental monitor will be present, as necessary, during clearing and grading activities.</p> <p>7. Establish a monitoring program to assess operational air emissions impacts to vegetation, with an emphasis on sensitive species.</p>			
Wildlife	<p>1. Formulate and implement a construction and restoration plan to minimize loss of wildlife habitat.</p> <p>2. Control offsite activity by construction and operations personnel. Restrict workers from unauthorized visits to sensitive wildlife areas such as harbor seal haul out grounds and marine bird roost sites and nesting colonies.</p> <p>3. A qualified biologist will inspect construction activities periodically.</p>	<p>1. Same as Cypress Ridge Mitigation Measures 2, 3, 4, and 6.</p>	<p>1. Same as Cypress Ridge Mitigation Measures 1-6.</p>	<p>1. Same as Cypress Ridge Mitigation Measures 1-6.</p>

TABLE S.1

SUMMARY OF MITIGATION MEASURES

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ENVIRONMENTAL CONSIDERATION	PROJECT SITE MITIGATION			
	CYPRESS RIDGE	SLC-6	BOATHOUSE FLATS	VINA TERRACE
Wildlife - (Cont'd.)	<p>4. Employ proper procedures and equipment at the External Tank Landing Facility to minimize the opportunity for wildlife to be affected by spills, human interference, or other hazards.</p> <p>5. Appropriate environmental monitor will be present, as necessary, during clearing and grading activities.</p> <p>6. Establish a monitoring program to assess operational noise and air emissions impacts to wildlife, with an emphasis on listed species.</p>			
Air Resources	<p>1. During project construction, water the project site and other construction areas as necessary to minimize visible particulate emissions. Minimize emissions from construction equipment and vehicles by proper engine maintenance.</p> <p>2. If necessary, modify ground disturbing activities to maintain opacity at or below recommended levels.</p> <p>3. Launch events will occur only during periods of favorable meteorological conditions, based on a forecast Toxic Hazard Corridor prepared for each launch.</p> <p>4. Install and maintain air pollution control equipment as necessary on project elements which emit air contaminants.</p>	<p>1. Same as Cypress Ridge Mitigation Measures 1-6.</p>	<p>1. Same as Cypress Ridge Mitigation Measures 1-6.</p>	<p>1. Same as Cypress Ridge Mitigation Measures 1-6.</p>

TABLE S.1
SUMMARY OF MITIGATION MEASURES

ENVIRONMENTAL CONSIDERATION	PROJECT SITE MITIGATION			
	CYPRESS RIDGE	SLC-6	BOATHOUSE FLATS	VINA TERRACE
Air Resources - (Cont'd.)	5. During construction, if required by SBCAPCD, activities may be curtailed in order to reduce emissions.			
	6. If feasible, air conditioning systems would utilize CFC-22, rather than CFC-12.			
	7. Acceptance testing for the fire suppression systems would be conducted using freon 12.			
Waste Management	1. Construction contractors would submit waste management plan that identifies the wastes to be generated during construction and their manner of handling and disposal.	1. Same as Cypress Ridge Mitigation Measures 1-4.	1. Same as Cypress Ridge Mitigation Measures 1-4.	1. Same as Cypress Ridge Mitigation Measures 1-4.
	2. Upgrade or replace existing evaporation ponds at SLC-6 in order to comply with new regulations, as necessary, to accept waste brine solution.			
	3. Use paints and primers with low metal content on structures which come into contact with deluge water.			
	4. If necessary, enlarge present or build new VAFB hazardous waste storage facilities.			
Noise	1. During launch events, exclude personnel from site areas exposed to the greatest noise levels. Provide hearing protection, as necessary.	1. Same as Cypress Ridge.	1. Same as Cypress Ridge.	1. Same as Cypress Ridge.

TABLE S.1
SUMMARY OF MITIGATION MEASURES

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ENVIRONMENTAL CONSIDERATION	PROJECT SITE MITIGATION			
	CYPRESS RIDGE	SLC-6	BOATHOUSE FLATS	VINA TERRACE
Visual Resources	1. Use low glare lights which are shielded from areas outside the perimeter of the launch complex, as appropriate.	1. Same as Cypress Ridge.	1. Same as Cypress Ridge.	1. Same as Cypress Ridge.
Cultural Resources	1. Avoidance is the preferred mitigation and will be utilized where feasible. 2. Implement data recovery procedures where avoidance is not feasible. 3. Qualified observers, including a Native American(s), will be present to monitor ground disturbing activities. 4. In general, design alignment of underground and aboveground utilities and access roads to avoid disturbance to known or suspected archaeological sites. 5. Mitigate potential impacts to the rock art site through pre-launch documentation and post-launch monitoring. 6. Limit movement of construction vehicles to staked areas. 7. Place power poles outside of intact archaeological sites, as feasible. 8. Design underground communications and utilities to avoid known or suspected site deposits as feasible.	1. Same as Cypress Ridge Mitigation Measures 3, 5, and 10.	1. Same as Cypress Ridge Mitigation Measures 1-10. 2. As feasible, avoid the archaeological site complex at Oil Well Canyon by project design. 3. Avoid areas along the bluff, as feasible.	1. Same as Cypress Ridge Mitigation Measures 1-10.

TABLE S.1

SUMMARY OF MITIGATION MEASURES

Page 6 of 6

ENVIRONMENTAL CONSIDERATION	PROJECT SITE MITIGATION			
	CYPRESS RIDGE	SLC-6	BOATHOUSE FLATS	VINA TERRACE
Cultural Resources - (Cont'd.)	<p>9. Utilize qualified personnel to monitor for paleontological resources during earth moving activities.</p> <p>10. Implement an accelerated maintenance program at the former U.S. Coast Guard Rescue Station (Boathouse).</p>			
Transportation	1. Support USAF policy of encouraging car pooling and staggered work hours to diminish peak traffic.	1. Same as Cypress Ridge.	1. Same as Cypress Ridge.	1. Same as Cypress Ridge.
Health and Safety	1. No additional mitigation measures beyond established USAF procedures are proposed for Health and Safety issues.	1. Same as Cypress Ridge.	1. Same as Cypress Ridge.	1. Same as Cypress Ridge.
Socioeconomics	1. No mitigation measures are proposed for Socioeconomics.	1. Same as Cypress Ridge.	1. Same as Cypress Ridge.	1. Same as Cypress Ridge.
Land Use	1. No mitigation measures are proposed for Land Use.	1. Same as Cypress Ridge.	1. Same as Cypress Ridge.	1. Same as Cypress Ridge.
Recreation	1. No mitigation measures are proposed for Recreation.	1. Same as Cypress Ridge.	1. Same as Cypress Ridge.	1. Same as Cypress Ridge.

CONCLUSIONS

Based on extensive evaluation and the comparative analysis of impacts, it has been concluded that there would be fewer environmental impacts associated with reconfiguration of SLC-6 than with development of either the proposed Cypress Ridge site or the Boathouse Flats or Vina Terrace alternatives. As shown in Table S.2, for the four sites evaluated, most environmental impacts would not be considered significant after mitigation measures were implemented. However, many of those impacts would not occur, and most others would be reduced, if the proposed action occurred at SLC-6 rather than at one of the undeveloped sites.

Implementation of the proposed action at SLC-6 would involve extensive site demolition, modification, and construction activities. However, additional excavation or ground clearing is not anticipated, as the proposed activities would occur within areas that have been previously disturbed. Therefore, compared to the undeveloped sites, implementing the SLC-6 alternative would result in less soil loss from construction and less impact to borrow and spoil sites.

Further, with the SLC-6 alternative, impacts to vegetation and special interest plants would be significantly less, since ground clearing activities are not planned. There also would be less impact to animal habitat and individuals and to sensitive animal species. In addition, since most major facility components are already built at SLC-6, there would be less visual impact than with the development of one of the other sites.

However, implementation of the SLC-6 alternative would result in greater generation of liquid hazardous waste, due to necessary modifications to the hypergolic fuel and oxidizer delivery systems prior to use for the Titan IV/Centaur. Also, because fewer personnel would be required for construction activities at SLC-6 than at an undeveloped site, there would be fewer economic benefits generated in the regional impact area during the project construction period.

Previously, the SLC-6 site was the subject of the USAF Environmental Impact Analysis Process which addressed modification of the Manned Orbital Laboratory facilities at the site to accommodate the Space Shuttle. As a result of that process, a Final Environmental Impact Statement (EIS) for the Space Shuttle Program at VAFB was issued in January 1978, with a Supplement to the Final EIS following in July 1983. Those documents addressed the construction and operation of Space Shuttle facilities at VAFB and Port Hueneme, California, activities similar

TABLE S.2
COMPARATIVE SUMMARY OF IMPACTS
SPACE LAUNCH COMPLEX 7
PROPOSED ACTION AND ALTERNATIVES

Page 1 of 4

DISCIPLINE/RESOURCE	POTENTIAL EFFECT	ALTERNATIVE SITE			
		CYPRESS RIDGE	SLC-6	BOAT- HOUSE FLATS	VINA TERRACE
1. Geology and Soils	<ul style="list-style-type: none"> • Earthquake • Landslide • Erosion • Soil losses <ul style="list-style-type: none"> - Construction - Operations • Excavation • Fill • Borrow site(s) • Spoil site(s) 	Ø ● ● ● ● ● ● ● ●	Ø ⊗ ⊗ ○ ⊗ ○ ○ ○ ○	Ø ○ ○ ⊗ ○ ⊗ ● ○ ⊗	Ø ● ● ● ● ○ ○ ○ ●
2. Water Resources					
• Ground Water	• Water Use	Ø	Ø	Ø	Ø
• Surface Water	<ul style="list-style-type: none"> • Increased runoff • Contamination from spill 	● Ø	○ Ø	⊗ Ø	● Ø
3. Vegetation	<ul style="list-style-type: none"> • Loss of habitat • Loss of sensitive species • Operational deposition 	⊗ ● ●	○ ○ ⊗	● ● ○	● ⊗ ●
4. Wildlife					
• Channel Islands birds, mammals	• Launch noise, sonic boom	Ø	Ø	Ø	Ø
• Nearshore marine birds, mammals	<ul style="list-style-type: none"> • Construction/operations disturbance • Use of External Tank Landing Facility • Air Emissions 	⊗ Ø ●	⊗ Ø ●	● Ø ●	○ Ø ○
• Terrestrial birds, wildlife	<ul style="list-style-type: none"> • Loss of habitat, roosting sites • Launch noise, sonic boom • Air emissions 	⊗ Ø Ø	○ Ø Ø	● Ø Ø	● Ø Ø

Legend

- = Least impact compared to other three sites
 ⊗ = Low intermediate impact compared to other three sites
 ● = High intermediate impact compared to other three sites
 ● = Most impact compared to other three sites
 Ø = Same impact

TABLE S.2
COMPARATIVE SUMMARY OF IMPACTS
SPACE LAUNCH COMPLEX 7
PROPOSED ACTION AND ALTERNATIVES

Page 2 of 4

DISCIPLINE/RESOURCE	POTENTIAL EFFECT	ALTERNATIVE SITE			
		CYPRESS RIDGE	SLC-6	BOATHOUSE FLATS	VINA TERRACE
5. Air Quality/Meteorology	<ul style="list-style-type: none"> • Facility construction dust • Pre-launch and post-launch processing emissions • Launch emissions • Vehicle failure emissions • Stratospheric ozone depletion 	● Ø Ø Ø Ø	○ Ø Ø Ø Ø	⊗ Ø Ø Ø Ø	● Ø Ø Ø Ø
6. Waste Management					
• Domestic Waste	• Santa Maria sewage treatment facility	Ø	Ø	Ø	Ø
• Industrial Waste	<ul style="list-style-type: none"> • Construction - North VAFB Class III landfill - Lompoc Class II landfill • Operations - North VAFB Class III landfill - Lompoc Class II landfill 	Ø Ø Ø Ø Ø	● ● Ø Ø Ø	Ø Ø Ø Ø Ø	Ø Ø Ø Ø Ø
• Hazardous Waste	<ul style="list-style-type: none"> • North VAFB hazardous waste storage facility - Construction - Operations • Class I landfill - Construction - Operations 	Ø Ø Ø Ø Ø	● Ø ● Ø Ø	Ø Ø Ø Ø Ø	Ø Ø Ø Ø Ø
7. Noise	<ul style="list-style-type: none"> • Normal launch • Explosion 	Ø Ø	Ø Ø	Ø Ø	Ø Ø
8. Visual Resources	<ul style="list-style-type: none"> • Impair view from Jalama Beach • Impair view from railroad 	⊗ ●	○ ○	● ●	● ⊗

Legend

- = Least impact compared to other three sites
- ⊗ = Low intermediate impact compared to other three sites
- = High intermediate impact compared to other three sites
- = Most impact compared to other three sites
- Ø = Same impact

TABLE S.2

**COMPARATIVE SUMMARY OF IMPACTS
SPACE LAUNCH COMPLEX 7
PROPOSED ACTION AND ALTERNATIVES**

Page 3 of 4

DISCIPLINE/RESOURCE	POTENTIAL EFFECT	ALTERNATIVE SITE			
		CYPRESS RIDGE	SLC-6	BOATHOUSE FLATS	VINA TERRACE
9. Cultural Resources					
• U.S. Coast Guard Rescue Station	• Disturbance from normal launch • Vibration and emissions	⊙ ⊙	○ ○	● ●	⊗ ⊗
• Rock Art Site	• Vibration and emissions • Disturbance from explosion	⊗ ⊗	● ●	○ ○	● ●
• Archaeological Resources	• Disturbance from grading and earthmoving	●	○	●	⊗
• Paleontology	• Disturbance from grading and earthmoving	⊙	○	●	⊗
• Caliche Fossils	• Vibration from sonic boom	∅	∅	∅	∅
10. Transportation	• Increase in traffic • Need for additional traffic control	∅ ∅	○ ○	∅ ∅	∅ ∅
11. Health and Safety	• Normal launch • Unscheduled event • Explosion damage • Fire damage • Stratospheric ozone depletion	∅ ∅ ● ● ∅	∅ ∅ ⊗ ⊗ ∅	∅ ∅ ● ● ∅	∅ ∅ ○ ○ ∅
12. Socioeconomics	• Construction - Increased employment - Increased population - Increased housing demand - Increased demand to public services/utilities - Increased local/regional spending • Operations - Increased employment - Increased population - Increased housing demand - Increased demand to public services/utilities - Increased local/regional spending	∅* ∅ ∅ ∅ ∅ ∅* ∅* ∅ ∅ ∅ ∅*	○* ○ ○ ○ ○ ○* ○* ∅ ∅ ∅ ∅*	∅* ∅ ∅ ∅ ∅ ∅* ∅* ∅ ∅ ∅ ∅*	∅* ∅ ∅ ∅ ∅ ∅* ∅* ∅ ∅ ∅ ∅*

Legend

- = Least impact compared to other three sites
 ⊗ = Low intermediate impact compared to other three sites
 ⊙ = High intermediate impact compared to other three sites
 ● = Most impact compared to other three sites
 ∅ = Same impact
 * = Positive/beneficial impact

TABLE S.2

**COMPARATIVE SUMMARY OF IMPACTS
SPACE LAUNCH COMPLEX 7
PROPOSED ACTION AND ALTERNATIVES**

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DISCIPLINE/RESOURCE	POTENTIAL EFFECT	ALTERNATIVE SITE			
		CYPRESS RIDGE	SLC-6	BOATHOUSE FLATS	VINA TERRACE
13. Land Use	<ul style="list-style-type: none"> • Interference to adjacent/nearby uses • New development area • Coastal zone management 	Ø ⊗ ●	Ø ○ ○	Ø ● ●	Ø ● ⊗
14. Recreation	<ul style="list-style-type: none"> • Jalama Beach closures • Marine recreation interruptions 	Ø Ø	Ø Ø	Ø Ø	Ø Ø

Legend

- = Least impact compared to other three sites
- ⊗ = Low intermediate impact compared to other three sites
- = High intermediate impact compared to other three sites
- = Most impact compared to other three sites
- Ø = Same impact

to those which would occur with implementation of the proposed Titan IV/Centaur program. The implementation of the Space Shuttle program addressed in those documents would have generated greater impacts to most resources than those expected to result from the Titan IV/Centaur program now being evaluated for that site.

Overall, the reconfiguration of SLC-6 for the Titan IV/Centaur program would result in fewer environmental impacts than would implementation of the proposed project at one of the three undeveloped sites.



Chapter 1.0

INTRODUCTION

1.0 INTRODUCTION

The purpose of this Final Environmental Impact Statement (EIS) is to respond to comments on the Draft Environmental Impact Statement for the Construction and Operation of Space Launch Complex 7 (SLC-7) for the Titan IV/Centaur at Vandenberg Air Force Base (VAFB), California.

1.1 ENVIRONMENTAL IMPACT ANALYSIS PROCESS

This Final Environmental Impact Statement has been prepared in accordance with: (1) the National Environmental Policy Act (NEPA), as implemented by Executive Order 11514, 42 USC 4321, (2) the President's Council on Environmental Quality (CEQ) Regulations, Title 40 Code of Federal Regulations (CFR), Part 1500 *et seq.*, and (3) USAF Regulations 19-1, 19-2, 19-7, and 19-9, which constitute USAF directives for compliance with NEPA.

The following briefly summarizes the EIS process as it relates to the proposed SLC-7 project:

- Notice of Intent to Prepare an EIS - The Notice of Intent for the proposed action is prepared and published in the Federal Register, as well as in local newspapers in the region of the proposed project. Publication occurred on April 8, 1988, for the proposed Titan IV/Centaur SLC-7 project.
- Public Scoping Meetings - Public scoping meetings are held to solicit input from interested individuals, groups, agencies, and elected officials. Items or issues to be addressed in the Draft EIS were compiled from both oral and written statements. These meetings are announced by: (1) publishing the Notice of Intent in the Federal Register, (2) letters to agencies, public officials, and public interest groups, (3) providing legal notices in local and regional newspapers, and (4) a USAF official news release to local and regional news media. These meetings were held on May 3 and 5, 1988, for the proposed Titan IV/Centaur SLC-7 project.
- Preparation of the Draft EIS - A Draft EIS is prepared that identifies, describes, and analyzes the environmental issues of the proposed action and alternatives.
- Review and Comment of the Draft EIS - The Draft EIS is released for review for 45 days to the public on July 20, 1989, including interested individuals, groups, government representatives, and agencies. The Draft EIS was filed with the Environmental Protection Agency (EPA) on July 21, 1989. The Federal Register Notice Of Availability appeared on July 28, 1989, which initiated the public comment period. The public comment period ended on September 11, 1989.

- Public Hearing - A public hearing is held during the 45-day Draft EIS review period to provide the public with an opportunity to verbally comment on the Draft EIS. Public hearings were held in Lompoc and Santa Barbara, California, on August 30 and 31, 1989, respectively.
- Preparation of the Final EIS - A Final Environmental Impact Statement (FEIS) is prepared. The FEIS incorporates and responds to public comments received as a result of public review of the Draft EIS.
- Record of Decision - After Federal Register publication of the Notice of Availability of the FEIS and a 30-day waiting period, the USAF makes its decision regarding the proposed action, prepares a concise public record on the decision, and publishes the decision in the Federal Register.

1.2 PUBLIC REVIEW

During the review period, comments on the Draft EIS were solicited from the public and from government agencies. Written comments were submitted to Headquarters Space Systems Division in Los Angeles, California. Written comments were received from 24 commenters, among whom were five federal, three state, and four local agencies. One Native American Indian organization and three private interest groups also commented. In addition, comments were received from eight private individuals.

Verbal comments were received at two public hearings, held in the Grossman Gallery at the Lompoc Public Library, Lompoc, California, on August 30, 1989, and in the Santa Barbara County Superintendent of Schools Auditorium, Santa Barbara, California, on August 31, 1989. A total of 46 persons attended the Lompoc public hearing while 16 were in attendance in Santa Barbara. A total of 272 comments on the Draft EIS were received. The predominant concerns expressed during the public comment period were impacts to area ground water aquifers that have existing overdraft conditions, vegetation and wildlife, and stratospheric ozone. Other issues included growth-induced impacts, air quality impacts, and mitigation of cultural resources.

The Air Force responses to comments on the Draft EIS address each comment individually (40 CFR Part 1503). A section providing factual clarifications and errata to the Draft EIS is included. Since changes to the text of the Draft EIS in response to the comments are minor, the Final EIS will consist of public and agency comments, responses to comments, addenda and errata to the Draft EIS, and a summary of the Draft EIS (40 CFR 1502.9).

1.3 FINAL EIS FORMAT

The Final EIS is organized under the following primary headings:

- **2.0 Public Comments and Responses**
 - This chapter contains the comments received from federal, state, and local agencies, elected officials, and the public (individuals and organizations) and the responses to those comments. The chapter contains both written comments and oral comments received on the Draft EIS at the public hearings.
- **3.0 Addenda and Errata to the Draft Environmental Impact Statement**
 - This chapter provides changes to the text of the Draft EIS in response to public comments.
- **4.0 List of Preparers**
 - This chapter identifies individuals and organizations responsible for producing the Final EIS.
- **5.0 References**
 - This chapter provides the list of materials referenced in the text of the Final EIS.
- **6.0 Final EIS Mailing List**
 - This chapter provides a list of agencies, organizations, elected officials, and individuals that were sent the Final EIS.
- **7.0 Documentation of Draft Environmental Impact Statement Public Hearings**
 - This chapter provides documentation of the Draft EIS public hearings.
- **Appendix A - Global Warming**
 - This appendix provides a brief discussion of potential global warming impacts that may occur as a result of the proposed action.



2.0 PUBLIC COMMENTS AND RESPONSES

2.1 WRITTEN PUBLIC COMMENTS AND RESPONSES

This section contains written comments received from federal, state, and local agencies, elected officials, and the public (individuals and organizations) following the review of the Draft EIS and responses to those comments, per the President's Council on Environmental Quality (CEQ) Regulations (40 CFR, Part 1503). Verbal comments from the public hearings are contained in Section 2.2, Hearing Comments and Responses. Comments are numbered consecutively, and the responses are keyed to those numbers. This section is structured so that each comment letter is followed by the responses to those comments. Where a comment warrants changes or additions to the text of the Draft EIS, it is so noted in the response, with the additional material contained in Chapter 3.0 (Addenda and Errata to the Draft EIS) in this Final EIS.

The following is a summary of the comment letters received as of October 6, 1989:

<u>Letter No.</u>	<u>Correspondent</u>
1	U.S. Department of Commerce, National Oceanic and Atmospheric Administration, National Marine Fisheries Service, E.C. Fullerton, Regional Director
2	U.S. Environmental Protection Agency, Region IX, Deanna Wieman, Director, Office of External Affairs
3	U.S. Department of the Interior, Patricia Sanderson Port, Regional Environmental Officer
4	Marine Mammal Commission, John R. Twiss, Jr., Executive Director
5	U.S. Department of Transportation, Federal Aviation Administration, Barry S. Brayer, Manager, Planning and International Aviation Staff, AWP-A
6	State of California, Office of Planning and Research, Robert P. Martinez, Director
7	The Resources Agency of California, Gordon F. Snow, Ph.D., for Assistant Secretary of Resources
8	California Regional Water Quality Control Board, Central Coast Region, William R. Leonard, Executive Officer
9	County of Santa Barbara, Air Pollution Control District, Deborah S. Pontifex, Responsible Agency Review
10	Santa Barbara County Park Department, Michael H. Pahos, Director of Parks

- 11 County of Santa Barbara, Resource Management Department, Jeffrey T. Harris,
Deputy Director
- 12 City of Lompoc, King Patrick Leonard, Planning Director
- 13 Vandenberg Village Community Services District, Howard E. Grantz,
President, Board of Directors
- 14 Bixby Ranch Company (September 8, 1989), Kenneth C. Bornholdt,
Senior Vice President and General Counsel
- 15 Bixby Ranch Company (October 6, 1989), Kenneth C. Bornholdt,
Senior Vice President and General Counsel
- 16 Tribal Elders Council, Manuel Armenta, Chairman, and David D. Dominguez,
Chairman, Santa Ynez Band of Mission Indians
- 17 Maurice "Greg" Cooper, Lompoc, California
- 18 Nancy Flanders, Lompoc, California
- 19 Lawrence E. Liles, Santa Barbara, California
- 20 John J. Markon, Lompoc, California
- 21 Michael E. McClure, Lompoc, California
- 22 J.C. Picciuolo, Lompoc, California
- 23 Mary Gaines Read, Lompoc, California
- 24 Donald D. Smith, Lompoc, California

LETTER 1

2-3



UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE

Southwest Region
300 South Ferry Street
Terminal Island, California 90731

September 12, 1989

F/SWR14:BH

Mr. John Edwards
HQ SSD/DEV
P.O. Box 92960
Los Angeles, CA 90009-2960

Dear Mr. Edwards,

This letter represents a review of your Draft Environmental Impact Statement for the construction and operation of Space Launch Complex 7 (SLC-7) at Vandenberg Air Force Base (VAFB). The development of this site is not likely to affect the population of harbor seals or California sea lions in California adversely. However, this project has the potential to adversely affect the local stock of harbor seals and California sea lions that use the Channel Islands, the area from Pt. Conception to Pt. Arguello and in particular the seals occupying the area near Rocky Pt.

General Comments:

VAFB is located adjacent to the Channel Islands which support major populations of California sea lions, harbor seals, northern fur seals and elephant seals. Concerns relative to the impact of sonic booms on seals by the previously proposed space shuttle launches were thoroughly examined and indicated that only minor disturbances would be expected. Given that lower level sonic booms are estimated from the Titan vehicles we do not expect this type of noise to adversely affect the seals. However, in order to verify that no impact will occur an appropriate monitoring program should be instituted.

South VAFB contains 12 of the 36 haulout sites located in Santa Barbara County but south VAFB comprises a much smaller proportion of the coastline in the county. The 533 seals counted at these sites in the 1988 survey account for approximately 42% of the seals observed in that county during the census. This situation probably exists at least in part because of the restricted nature of beach access on south VAFB which precludes human disturbance. It is of particular interest that the haulout use has expanded over the last few years, both in terms numbers of haulouts used and numbers of seals present, in the vicinity of Rocky Pt. This may be a result of disturbance at other mainland sites and or an increasing regional population. The fluctuating annual counts in the most recent years at these haulout sites suggest that movements between other mainland and island haulouts commonly occur. It is also important to note that at least one of the

south VAFB haulouts is used for pupping.

- [2] All four of the proposed SLC-7 sites are located within two miles of a least one of the haulouts areas. The proposed SLC sites are all closer to seal haulout areas than any of the other SLCs that are currently in operation. Because of this close proximity we agree that noise and air pollution from launch operations may potentially impact the seals and may constitute a take under the Marine Mammal Protection Act. In order for this take to be legal, a small take permit needs to be obtained from NOAA Fisheries. It is possible that the existing small take permit issued for the space shuttle could be modified although there are some additional impacts under this project that need to be considered.

- [3] The DEIS states that launch noise may result in a temporary hearing loss for terrestrial biota within a three to five mile radius of the launch facility. However, although the DEIS acknowledges that the long, loud noise of the launch may disturb animals, it does not identify the degree of disturbance launch noise may produce. It should be noted that for short, loud noises such as sonic booms, it has been found that disturbance of harbor seals may not occur unless there is an accompanying visual stimulus. Given that only three, well separated launches are scheduled per year we do not expect that hearing impairment or permanent displacement would occur. However, monitoring of seal hearing ability and behavioral responses to simulated levels of launch noise would prove valuable in evaluating these potential impacts. Further, monitoring of the seasonal occurrence of seals would identify the times of year when the fewest seals are present and thus when the lowest impact from launches on the regional stock would be expected. Finally, appropriate monitoring of the local harbor seals should be conducted during all actual launches after the SLC is constructed to ensure no short or long term effects exist.

- [4] Impacts on air quality from launch gases were identified as a factor of concern for pinnipeds. However, despite the modeling of a Toxic Hazard Corridor which may result in launch postponement if it encompasses an unprotected human population, no similar consideration is given to wildlife. We feel that local pinniped haulout sites should be also be considered relative to this model and launch postponement occur if the seals would be exposed to levels of toxic gases that would adversely impact humans respiratory systems. Should it be necessary to determine toxic gas concentrations around a launch site, monitoring around SLC-4 at distances similar to that which seals would be found on haulouts from the proposed SLC sites should be initiated.

Specific Comments:

- [5] p.1-10 section 1.5.1.2. This section should note that if a "take" is expected to occur that a small take permit is required.

- [6] p. 1-22 section 1.5.6. A "small take permit" from NOAA Fisheries should be added to this list.
- [7] p. 2-59 section 2.3.4. This section should also include impact information concerning seals which use mainland haulout sites.
- [8] p. 2-60 second paragraph, line 4. Delete "Guadalupe fur seal" and insert "northern elephant seal"
- [9] p. 2-53 sixth paragraph line 3. The species of cetacean in this sentence is not identified.
- [10] p. 3-64 Boathouse flats section. Due to this site's close proximity to the seal haulouts, seals should be discussed in this section.
- [11] p. 4-40 first paragraph, line 7. There have been no direct studies to demonstrate that space shuttle generated sonic booms will not permanently damage hearing in marine mammals.
- [12] p. 4-40 sixth paragraph, line 2. "only one launch would occur during the pupping season" - it should be noted that this is probably for harbor seals since the other species generally breed at other times. However, because of the separation of pupping times it is more accurate to note that more than one launch may occur during seal or sea lion pupping seasons.
- [13] p. 4-41 first paragraph, line 1. Insert "harbor seals" between ... 120 pups....
- [14] p. 4-41 fourth paragraph, line 6. We are not aware of a small take permit being in process for SLC-4.
- [15] p. 4-53 first paragraph. The analyses of effect of Titan IV programs have occurred at SLC-4 which is located several miles from the harbor seal haulouts. The 1988 report which cited does not state how the biota were monitored during launches. Thus it is inappropriate to state that there was no significant impact to marine biota.
- [16] P. B-43. Callorhinus ursinus, northern fur seal; depleted; none - should be added to the three columns in Table B.11 under mammals.

We appreciate the opportunity to review the DEIS. If you have any questions about our comments please contact Mr. Brad Hanson of my staff at (213) 514-6666.

Sincerely,

E. C. Johnston

RESPONSE TO LETTER 1

Received From: U.S. Department of Commerce
National Oceanic and Atmospheric Administration
National Marine Fisheries Service
E. C. Fullerton, Regional Director

Comment No. 1: Monitoring Program

As discussed in Section 4.4.5, Mitigation Measures, a monitoring program with an emphasis on listed species would be implemented to assess impacts to wildlife from noise and air emissions. The NMFS (and USFWS) will be consulted in the development of this program.

Comment No. 2: Incidental Take Permit

The potential need for an incidental take permit is discussed in Section 4.4.1, Regional Environment.

Comment No. 3: Monitoring Program

As noted in response to Comment No. 1, a monitoring program will be developed in cooperation with NMFS (and USFWS). The specific duration of the program and its content will be developed during this consultation to ensure that marine mammals are protected.

Comment No. 4: Rocket Exhaust Impacts to Pinnipeds

As indicated in Section 4.4.2.1, Cypress Ridge, best available scientific information indicates that impacts to local fauna such as pinnipeds are not expected to be significant. Since these impacts are not expected to be significant, real-time modeling such as the toxic hazard corridor (THC) would not be necessary. In addition, launch monitoring will be performed to minimize impacts to pinnipeds (see response to Comment No. 15).

Comment No. 5: Incidental Take Permit

The additional information to be added to Section 1.5.1.2, Marine Mammal Protection Act (page 1-10 of the Draft EIS), is contained in Section 3.0 of this Final EIS.

Comment No. 6: Incidental Take Permit

The additional information to be added to Section 1.5.6, Federal Permit Compliance, is contained in Section 3.0 of the Final EIS. Since the determination that an incidental take permit will be required has not been made, the suggested text has been added to page 1-23 of the Draft EIS.

Comment No. 7: Impacts to Seals at Haulout Sites

The information summarizing impacts to seals which use mainland haulout sites is contained in Draft EIS Section 2.3.4, Wildlife, on page 2-61.

Comment No. 8: Northern Elephant Seal Identification

The suggested changes to the text of Section 2.3.4 (page 2-60) are contained in Section 3.0 of the Final EIS.

Comment No. 9: Cetacean Species

The cetacean species referred to on page 3-53 of the Draft EIS is the gray whale. The revision to the text is contained in Section 3.0 of the Final EIS.

Comment No. 10: Seal Discussion

There are several areas near the Boathouse Flats alternative site that are of importance to marine mammals. The pocket beach immediately north of the mouth of Oil Well Canyon is a hauling ground and rookery for the area. Additional haulout sites occur towards Rocky Point and include the boathouse breakwater. The 1986 census produced counts totalling 500 seals for these sites (Hanan et al. 1987).

Comment No. 11: Sonic Boom Studies

The Space Shuttle analysis referred to on page 4-40 is the collective body of work on the potential effects of Space Shuttle sonic booms on marine mammals in the region of influence. While there have not been direct observations made of Space Shuttle impacts to marine mammals (primarily since the Space Shuttle has not been launched from VAFB), the body of

work undertaken in support of the Shuttle includes using other sources of noise and observing the resultant animal behavior. In addition, extensive field observation of a wide variety of stimuli, including sonic booms from airplanes, and resultant animal behavior have been documented (Jehl and Cooper 1980).

Comment No. 12: Pupping Season

Pupping seasons for pinnipeds in the region are as follows:

California Sea lion	mid-May to late June
Northern fur seal	early June to late July
Northern elephant seal	mid-January to early February
Harbor seal	mid-February to mid-April

The text on page 4-40 was written in reference to the harbor seal, which has a short pupping season. As indicated above, pupping may occur almost continuously from January through July, a period long enough for two launches if the timing were coincident with these periods. The revision to the text is contained in Section 3.0 of the Final EIS.

Comment No. 13: Harbor Seals

The text on page 4-41 does pertain to Harbor seals. The appropriate revision to the text is contained in Section 3.0 of the Final EIS.

Comment No. 14: Incidental Take Permit for SLC-4

Issues regarding an incidental take permit at SLC-4 have made this reference inappropriate. As noted in Section 3.0 of the Final EIS, this text has been deleted.

Comment No. 15: Impacts to Marine Biota

This text summarizes the results of conclusions drawn for the biological assessment for Titan II and IV operations at SLC-4 (Engineering Science and Sea World Research Institute 1988). On page 6-3 of the Titan II and IV biological assessment, the text notes that, "There would be no air-emission-related impact to marine biota or to Channel Islands biota from operation of the proposed Titan II and Titan IV programs." The report was written prior to launches and bases

its conclusions on analysis, rather than monitoring. This information can be used to draw preliminary conclusions about the potential for impacts from operations at SLC-7 which would be rigorously tested through the proposed monitoring program.

Comment No. 16: Northern Fur Seal

The additions to Table B.11 to reflect the recent status change for the Northern fur seal are shown in Section 3.0 of the Final EIS.

LETTER 2



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION IX

215 Fremont Street

San Francisco, Ca. 94105

11 SEP 1989

HQ Space Systems Division
U.S. Air Force
P.O. Box 92960
ATTN: Mr. John Edwards
Los Angeles AFB, California 90009-2960

Dear Mr. Edwards:

The U.S. Environmental Protection Agency (EPA) has reviewed the Draft Environmental Impact Statement (DEIS) for CONSTRUCTION AND OPERATION OF SPACE LAUNCH COMPLEX 7, VANDENBERG AIR FORCE BASE, Santa Barbara County, California. The proposed launch facility would provide for processing and launch of the Titan IV/Centaur, an unmanned space vehicle, for 10,000 pound Department of Defense payloads into high energy, near polar orbits. The proposed project will require a number of infrastructure facilities, including a launch support structure, launch mount and umbilical tower, mobile service tower, sewage treatment facilities, support buildings, propellant and gas holding areas, roads, and power and utility lines. The proposed Cypress Ridge site and three alternative sites (Boathouse Flats, Vina Terra and Space Launch Complex 6) are located within the same general area of south Vandenberg Air Force Base. The Space Launch Complex 6 site was previously developed for Space Shuttle activities but is now in an inactive status, while the other three sites are undeveloped.

Our comments are provided pursuant to EPA's authorities under the National Environmental Policy Act (NEPA), Section 309 of the Clean Air Act, and the Council on Environmental Quality's Regulations for Implementing the Procedural Provisions of NEPA. We have classified this DEIS as Category EC-2, Environmental Concerns - Insufficient Information (please see "Summary of Rating Definitions and Follow-up Actions").

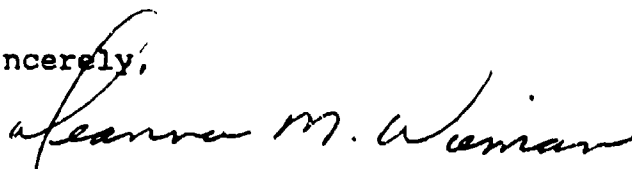
We have environmental concerns because the proposed project may have adverse impacts on waters of the United States, including wetlands and other "special aquatic sites" regulated under Section 404 of the Clean Water Act. The Final Environmental Impact Statement (FEIS) will need to more fully discuss the proposed project's compliance with the Section 404(b)(1) Guidelines.

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We also request that the FEIS contain more information on existing air quality conditions in Santa Barbara County and air quality modeling; information on compliance with the Resource Conservation and Recovery Act (particularly its corrective action, underground storage tank and waste minimization provisions); and a commitment that SLC-7 activities will not interfere with the assessment, identification and cleanup of hazardous substances if they are discovered on the project site. Finally, we request that the U.S. Air Force work closely with the U.S. Fish and Wildlife Service on potential impacts to threatened, endangered and candidate species.

We appreciate the opportunity to comment on the proposed project. Please send us three copies of the FEIS at the same time it is officially filed with EPA's Washington, D.C. office. If you have any questions, please call me at 415-974-8083 (FTS 454-8083) or David Tomsovic at 415-974-7451 (FTS 454-7451).

Sincerely,



Deanna M. Wieman, Director
Office of External Affairs

Enclosures: one page EIS rating sheet
six pages of comments on DEIS

cc: Robert B. Cameron, Air Force AFRCE, San Francisco
District Engineer, Army Corps of Engineers, Los Angeles
Nancy Kaufman, U.S. Fish and Wildlife Service, Laguna Niguel
Deborah Pontifex, Santa Barbara County APCD, Santa Barbara
Jeffrey Harris, Santa Barbara County Resource Management
Department, Santa Barbara
William Leonard, Regional Water Quality Control Board,
San Luis Obispo

COMMENTS BY U.S. EPA TO U.S. AIR FORCE (USAF) ON DRAFT EIS FOR SPACE LAUNCH COMPLEX 7 (SLC-7), VANDENBERG AIR FORCE BASE, SANTA BARBARA COUNTY, CALIFORNIA. SEPTEMBER 1989.

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REGULATORY COMPLIANCE COMMENTS

- [17] 1. The regulatory compliance section of the DEIS (page 1-21) states that the Resource Conservation and Recovery Act (RCRA) incorporates special standards for wastewater treatment units. We recommend that the regulatory section of the FEIS note that other provisions of the RCRA may also be applicable, including those on corrective action, underground storage tanks, and waste minimization.
- [18] 2. The regulatory compliance section (DEIS, page 1-20) on the Clean Water Act should be amended to discuss Section 313. Section 313 requires that each department or agency of the Federal Government engaged in an activity that may result in the discharge or runoff of pollutants must comply with all Federal, State and local requirements respecting the control and abatement of water pollution to the same extent as any nongovernmental entity.
3. We recommend that two Executive Orders (EO) be included in the FEIS's regulatory compliance section. They are: (1) Executive Order 11990, "Protection of Wetlands," May 24, 1977; and (2) Executive Order 12088, "Federal Compliance with Pollution Control Standards," October 13, 1978.
- [19] EO 11990 provides that, "Each agency...shall take action to minimize the destruction, loss or degradation of wetlands, and to preserve and enhance the natural and beneficial values of wetlands..." and that no new construction shall occur in wetlands unless the agency finds that there is "no practicable alternative to such construction and that the proposed action includes all practicable measures to minimize harm to wetlands which may result from such use."
- EO 12088 provides that each Federal agency shall cooperate and consult with the EPA and State/local agencies on the prevention, control and abatement of environmental pollution. The EO is currently being revised and its provisions may significantly change. We recommend that the FEIS discuss compliance with the revised EO if it is signed by the President before the FEIS is issued.

WETLANDS COMMENTS - CLEAN WATER ACT (CWA)

We commend the U.S. Air Force for developing alternatives that avoid the placement of fill or project features in wetlands. For example, the DEIS (pages 4-32 and 4-33) states that power lines will be placed to avoid wetlands. However, as the DEIS states on page 1-23, a Section 404 permit may be required from the U.S. Army Corps of Engineers, depending upon final project design and operational procedures. Section 404 governs the placement of dredged or fill material into waters of the United States,

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including wetlands and other "special aquatic sites."

We request that the FEIS discuss the proposed project's consistency with Federal Guidelines for Specification of Disposal Sites for Dredged or Fill Materials [the 404(b)(1) Guidelines, found at 40 CFR Part 230]. We recommend that the U.S. Air Force work closely with EPA and the Army Corps of Engineers' Los Angeles District should Section 404 prove applicable. In order to demonstrate compliance with the 404(b)(1) Guidelines, the proposed project must meet the following criteria.

1. The proposed discharge must be the practicable alternative which would have the least adverse impact on the aquatic ecosystem [40 CFR 230.10(a)].

[20]

2. The proposed project must not cause or contribute to significant degradation of waters of the United States, including wetlands and other special aquatic sites [40 CFR 230.10(c)]. Significant degradation includes the loss of fish and wildlife habitat and the loss of other wetland habitat values and functions. Significant degradation also includes cumulative impacts.

3. The proposed project does not violate State-adopted, EPA-approved water quality standards or jeopardize the continued existence of any species listed as threatened or endangered under the Endangered Species Act [40 CFR 230.10(b)].

4. All appropriate and practicable steps have been taken to minimize adverse impacts on the aquatic ecosystem (i.e., mitigation) [40 CFR 230.10(d)]. It is essential that the Air Force undertake every practicable effort to first avoid and then reduce the amount of fill placed into waters of the United States. The FEIS's alternatives analysis should fully document the avoidance and minimization of adverse impacts on aquatic ecosystems. Finally, the FEIS must describe appropriate and practicable measures to compensate for the unavoidable loss of wetlands and other waters of the United States.

In order to assist EPA, the Army Corps of Engineers, the U.S. Fish and Wildlife Service, the National Marine Fisheries Service and the California Department of Fish and Game in evaluating the proposed project's consistency with the 404(b)(1) Guidelines, we recommend that the FEIS contain the following information.

[21] * the number of acres subject to Section 404 jurisdiction that would be filled,

[22] * a brief assessment of the historic cumulative loss or degradation of waters of the United States on Vandenberg Air Force Base,

[23] * the types and quantities of fill material that would be discharged into waters of the United States, including wetlands and other special aquatic sites,

[24] * the number of acres subject to Section 404 jurisdiction that would be permanently lost or degraded due to impacts other than the placement of fill (e.g., the impacts of erosion, sedimenta-

tion and runoff of pollutants on wetland habitats; accidental discharge of fuels or other toxic substances into wetland habitats; diversion of water from wetland habitats), 11 SEP 1989

- [25] * the habitat value and location of habitats permanently lost or degraded,
- [26] * a specific mitigation proposal to fully compensate for the loss or degradation of wetland habitats, including the proposed mitigation replacement ratio, the habitat value and proposed location of replacement habitats, specific grading and revegetation plans, and a biological maintenance and monitoring program,
- [27] * clear mitigation goals and objective, quantifiable criteria by which to judge the success or failure of mitigation, and
- [28] * firm commitments by the U.S. Air Force to ensure the restoration or creation of wetland habitats of equal or greater resource value, and commitments to ensure their protection for the life of the project.

BIOLOGICAL RESOURCE COMMENTS

The proposed project may have an adverse impact on a plant, *Monardella undulate* var. *frutescens*, listed as a candidate species under the Federal Endangered Species Act (ESA). The development of the Cypress Ridge site (the preferred alternative in the DEIS) would involve the loss of 800-1,000 mature individuals. The DEIS notes that this significant impact "could be minimized by revegetation."

- [29] We encourage the U.S. Air Force to work closely with the U.S. Fish and Wildlife Service on ESA concerns. The FEIS should document any ESA Section 7 consultation which has been performed. The vegetation section of "Summary of Mitigation Measures" in the FEIS should be amended to include Section 7 consultation information and any recommendations made by the U.S. Fish and Wildlife Service.

HAZARDOUS WASTE/UNDERGROUND STORAGE TANK SYSTEM COMMENTS - RESOURCE CONSERVATION AND RECOVERY ACT - (RCRA)

The DEIS's discussion on the hazardous materials and hazardous waste associated with the proposed project is comprehensive. It provides an excellent overview of the types and volumes of hazardous and toxic materials associated with the construction and operation of a space launch facility. For clarification, we recommend that the FEIS discuss the following RCRA issues in greater detail.

- [30] 1. The FEIS should discuss the applicability of any RCRA corrective action requirements which may be necessary at the four alternative sites. The FEIS should also discuss the applicability of State laws/rules governing the identification, assessment and cleanup of hazardous substances or hazardous waste, as it relates to the four alternative sites.

2. In 1984 Congress amended the Resource Conservation and Recovery Act by adding Subtitle I, which required the EPA to develop regulations to protect ground water resources and public health from leaks from underground storage tank (UST) systems containing petroleum products or hazardous chemicals. An UST is defined as any tank, including underground piping connected to the tank, that has at least ten percent of its volume underground. Certain types of tanks are not covered by EPA's UST regulations (e.g., tanks holding 110 gallons or less; emergency spill and overfill tanks; surface impoundments and pits; septic tanks and systems to collect storm water and wastewater).

[31] The FEIS should assess whether any RCRA-regulated UST systems exist on sites proposed for SLC-7 activities. If there are any UST systems on the proposed sites, we recommend that the FEIS assess the potential for contamination of soil or ground water resources due to leaks or discharges.

[32] The FEIS should discuss RCRA requirements for existing and proposed UST systems. It should also discuss the applicability of any State or local laws/rules concerning UST systems since Congress has given States the authority to adopt UST laws that are more stringent than Federal RCRA requirements.

3. The 1984 RCRA amendments mandate waste minimization in order to protect public health and the environment. Waste minimization means the reduction, to the extent feasible, of any solid or hazardous waste that is generated, treated, disposed of, or stored. We commend the U.S. Air Force for proposing actions that would reduce the amount of hazardous waste generated by the proposed project (e.g., using paints and primers with low contents of metals such as lead, zinc and cadmium, DEIS, page 4-94).

[33] We strongly encourage the adoption of "fullscale waste minimization" as a waste management mitigation measure. As the DEIS notes on page 3-83, "alternatives should be considered before designating wastes for landfill disposal. One alternative is waste minimization by onsite/offsite recycling."

We suggest that the FEIS identify the array of methods that will be used to achieve waste minimization. They may include the following approaches and techniques:

- * purchase fewer toxic and more nontoxic production materials;
- * inventory and trace all raw materials;
- * install equipment that produces minimal or no waste;
- * modify equipment to enhance recovery or recycling options;
- * substitute nonhazardous for hazardous raw materials;
- * segregate wastes by type for recovery;
- * eliminate sources of leaks and spills;
- * separate hazardous from nonhazardous wastes; and
- * recycle onsite and offsite for reuse.

HAZARDOUS SUBSTANCE COMMENTS - COMPREHENSIVE ENVIRONMENTAL RESPONSE, COMPENSATION AND LIABILITY ACT, AS AMENDED BY SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT (CERCLA/SARA) 11 SEP 1989

[34] The DEIS states (pages 3-90 to 3-92) that, according to the Department of Defense's Installation Restoration Program, none of the four alternative sites contain any hazardous waste locations and do not come under the jurisdiction of either the Comprehensive Environmental Response, Compensation and Liability Act or the Superfund Amendments and Reauthorization Act (CERCLA-SARA). However, we request that the FEIS contain a commitment to ensure the following, if hazardous substances are located at any of the four alternative sites.

1. If the U.S. Air Force discovers evidence of hazardous substances contamination in the future, it will promptly notify the EPA and comply with all applicable requirements of CERCLA/SARA and the National Contingency Plan (NCP).

2. The FEIS should also contain a commitment that if CERCLA hazardous substances are discovered at the proposed project sites, no construction will occur until the requirements of CERCLA/SARA and the NCP have been fully satisfied. CERCLA/SARA/NCP activities would take priority over new construction at any contaminated sites until CERCLA/SARA compliance has been achieved.

3. The U.S. Air Force will coordinate with appropriate State and local regulatory agencies (e.g., Regional Water Quality Control Board; California Department of Health Services; city and county health departments) to determine their concerns on the identification, assessment or cleanup of hazardous substances or hazardous waste.

AIR QUALITY COMMENTS - CLEAN AIR ACT

[35] 1. The FEIS should note the EPA's May 1988 State Implementation Plan (SIP) Call for Santa Barbara County. This SIP Call requires the County to prepare a new Plan to meet the ozone standard. The Plan will control emissions for the entire county.

[36] 2. The FEIS should contain a more detailed discussion of how the U.S. Air Force modeled potential air quality impacts and the potential for violation of air quality standards. The FEIS should provide more detailed information to justify the conclusion that there would be no violations of Federal or State air quality standards. The FEIS should address the increments for Prevention of Significant Deterioration, including the new nitrogen dioxide increment.

[37] We understand that the Santa Barbara County Air Pollution Control District (SBCAPCD) may have concerns regarding the appropriateness of the model used in the DEIS. Although we have not received a copy of the SBCAPCD's comment letter on the SLC-7 DEIS, we strongly recommend that the U.S. Air Force fully

coordinate air quality modeling and compliance with Federal/State air quality standards with the SBCAPCD. This is critical because the SBCAPCD must issue an Authority to Construct (ATC) permit to the U.S. Air Force, and has been delegated compliance and enforcement authorities under the Federal Clean Air Act.

[38] 3. The DEIS notes (page 2-81, 4-64/4-66) that scheduling of launches will help to minimize adverse air quality impacts. In light of the 1987 determination by the SBCAPCD that north Santa Barbara County is a nonattainment area for ozone and its precursor pollutants, we recommend that the U.S. Air Force coordinate its launch schedule with the SBCAPCD, unless precluded by national security considerations. We recommend that the air resources section of the "Summary of Mitigation Measures" be amended to include coordination of launch schedules with the SBCAPCD to help protect air quality and to prevent violations of Federal/State air quality standards.

[39] 4. The DEIS states that the U.S. Air Force will use, where feasible, chlorinated fluorocarbons (CFCs) that are not as destructive of the stratosphere as products that have been used in past decades. We commend the efforts of the U.S. Air Force to protect the stratosphere, and urge that every effort be made to not use CFC products which are destructive of the stratosphere.

11 SEP 1989

Environmental Impact of the ActionIO--Lack of Objections

The EPA review has not identified any potential environmental impacts requiring substantive changes to the proposal. The review may have disclosed opportunities for application of mitigation measures that could be accomplished with no more than minor changes to the proposal.

EC--Environmental Concerns

The EPA review has identified environmental impacts that should be avoided in order to fully protect the environment. Corrective measures may require changes to the preferred alternative or application of mitigation measures that can reduce the environmental impact. EPA would like to work with the lead agency to reduce these impacts.

EO--Environmental Objections

The EPA review has identified significant environmental impacts that must be avoided in order to provide adequate protection for the environment. Corrective measures may require substantial changes to the preferred alternative or consideration of some other project alternative (including the no action alternative or a new alternative). EPA intends to work with the lead agency to reduce these impacts.

EU--Environmentally Unsatisfactory

The EPA review has identified adverse environmental impacts that are of sufficient magnitude that they are unsatisfactory from the standpoint of environmental quality, public health or welfare. EPA intends to work with the lead agency to reduce these impacts. If the potential unsatisfactory impacts are not corrected at the final EIS stage, this proposal will be recommended for referral to the Council on Environmental Quality (CEQ).

Adequacy of the Impact StatementCategory 1--Adequate

EPA believes the draft EIS adequately sets forth the environmental impact(s) of the preferred alternative and those of the alternatives reasonably available to the project or action. No further analysis or data collection is necessary, but the reviewer may suggest the addition of clarifying language or information.

Category 2--Insufficient Information

The draft EIS does not contain sufficient information for EPA to fully assess environmental impacts that should be avoided in order to fully protect the environment, or the EPA reviewer has identified new reasonably available alternatives that are within the spectrum of alternatives analyzed in the draft EIS, which could reduce the environmental impacts of the action. The identified additional information, data, analyses, or discussion should be included in the final EIS.

Category 3--Inadequate

EPA does not believe that the draft EIS adequately assesses potentially significant environmental impacts of the action, or the EPA reviewer has identified new, reasonably available alternatives that are outside of the spectrum of alternatives analyzed in the draft EIS, which should be analyzed in order to reduce the potentially significant environmental impacts. EPA believes that the identified additional information, data, analyses, or discussions are of such a magnitude that they should have full public review at a draft stage. EPA does not believe that the draft EIS is adequate for the purposes of the NEPA and/or Section 309 review, and thus should be formally revised and made available for public comment in a supplemental or revised draft EIS. On the basis of the potential significant impacts involved, this proposal could be a candidate for referral to the CEQ.

*From: EPA Manual 1640, "Policy and Procedures for the Review of Federal Actions Impacting the Environment."

RESPONSE TO LETTER 2

Received From: U.S. Environmental Protection Agency, Region IX,
Deanna Wieman, Director, Office of External Affairs

Comment No. 17: Discussion of Resource Conservation and Recovery Act

The USAF concurs that other sections of RCRA may be applicable to the project. The additional text is contained in Section 3.0 of this Final EIS.

Comment No. 18: Discussion of Clean Water Act

A discussion of Section 313, Federal Facilities Pollution Control, is contained in Section 3.0 of this Final EIS.

Comment No. 19: Discussion of Executive Orders 11990, Protection of Wetlands, and 12088, Federal Compliance with Pollution Control Standards.

The insertion of discussions Executive Orders 11990 and 12088 is contained in Section 3.0 of this Final EIS.

Comment No. 20: Discussion of Project Consistency with Clean Water Act Section 404 (Dredge and Fill)

A Section 404 permit or modification to a current permit (88-201-KK) may be required to perform maintenance dredging at Harbor V-33 if project materials are brought to VAFB by water transport. It is not known at this time if this maintenance dredging would be required, since project materials may be delivered to VAFB by land. Permit 88-201-KK allows maintenance dredging to a depth of 12.4 feet below mean sea level to accommodate barge usage until 1991. Dredged material for SLC-7 would be disposed of at the abandoned borrow site located along the coastal bluffs at Point Pedernales (as per Permit 88-201-KK) or at another approved site.

This activity would be accompanied by the appropriate NEPA documentation at the time of determination of need for the Section 404 permit.

As noted in Section 2.1.4.1 and depicted on Figure 2.1.11, unused cut (or fill) material would be removed from the project area and transferred to a spoil site located about three miles north of Cypress Ridge, near Point Arguello. This site is neither on nor in any waters or wetlands. As discussed in Section 2.3.3, impacts to wetlands and riparian habitat would be avoided. In Section 3.4.2.1, Wildlife of Riparian Woodland/Wetland Habitats, it is noted that there are no threatened or endangered species expected to occur in these habitats in the study area.

Comment No. 21: Number of Acres Subject to Section 404 Jurisdiction that Would Be Filled

This information would be provided in future NEPA documentation should a Section 404 permit become necessary.

Comment No. 22: Historic Cumulative Loss or Degradation of Waters on Vandenberg Air Force Base

This assessment would be provided in future NEPA documentation should a Section 404 permit become necessary.

Comment No. 23: Types and Quantities of Fill Material

See Response to Comment No. 21.

Comment No. 24: Number of Acres Subject to Section 404 Jurisdiction that Would Be Permanently Lost or Degraded

See Response to Comment No. 21.

Comment No. 25: Value and Location of Habitat that Would Be Permanently Lost or Degraded

See Response to Comment No. 21.

Comment No. 26: Specific Mitigation Proposal for Loss or Degradation of Wetlands

See Response to Comment No. 21. Mitigation measures are not necessary since loss or degradation of wetlands is not expected to occur.

Comment No. 27: Wetlands Mitigation Goals, Objectives, and Criteria

See Response to Comment Nos. 21 and 26.

Comment No. 28: U.S. Air Force Commitments to Ensure Restoration or Creation of Wetlands to Offset Impacts

See Response to Comment No. 21. Since impacts to wetlands are not anticipated, there are no requirements for restoration or creation of wetlands.

Comment No. 29: Include Section 7 Consultation and Recommendations as Mitigation for Vegetation

Section 2.5.3 will be amended to include Section 7 consultation information as available and recommendations made by the U.S. Fish and Wildlife Service.

Comment No. 30: Applicability of Resource Conservation and Recovery Act Corrective Action Requirements at Proposed and Alternative Sites

If underground storage tanks (UST) were discovered at the site selected for development of SLC-7, the corrective actions mandated by the Resource Conservation and Recovery Act (RCRA) and Santa Barbara County Ordinance No. 3421 (An Urgency Ordinance to Add Article III to Chapter 18 of the Santa Barbara Code Requiring Permits for the Underground Storage of Hazardous Materials and Providing for the Application of Fees), as administered by Santa Barbara County Health Care Services, would apply and corrective measures would be taken or a variance would be obtained from Santa Barbara County.

Comment No. 31: Discussion of Resource Conservation and Recovery Act-Regulated Underground Storage Tanks at Proposed and Alternative Sites

There have been no indications of USTs noted at the proposed or alternative sites, except SLC-6. SLC-6 has the following USTs that are subject to RCRA regulations (see Figure 2.2.3, SLC-6 Launch Complex):

<u>Location</u>	<u>Size⁽¹⁾</u>	<u>Quantity</u>	<u>Use</u>
Payload Preparation Room	27,054	1	No. 2 Diesel Fuel
Ice Suppression System	20,000	2	JP-4 Aviation Fuel
Security Entry Control Building	550	1	No. 2 Diesel Fuel
North Security Entry Control Building	550	1	No. 2 Diesel Fuel
Fuel Unloading Area	3,000	1	Propane

(1) Gallons

Should SLC-6 be chosen for development of the proposed action, these tanks would be brought up to compliance standards as noted in response to Comment No. 97 or a variance would be obtained.

Comment No. 32: Discussion of Resource Conservation and Recovery Act Requirements for Existing and Proposed Underground Storage Tanks

There are no USTs proposed for SLC-7 at this time. However, should there be a need for USTs, the minimum RCRA requirements for all new USTs (including underground pipes connected thereto) would be met. These requirements are:

- The owner or operator must certify that the UST is installed properly.
- The UST must be protected from corrosion. A steel UST must be "cathodically" protected and sealed with a corrosion resistant coating. Other USTs must be made of noncorrodible material or of a composite of steel and noncorrodible material.
- The UST must be equipped with devices that prevent spills and overfills. Correct tank filling procedures must be followed.
- The UST must have leak detection method that provides monitoring for leaks at least every 30 days.

Additionally, all new chemical USTs must have secondary containment equipped with an interstitial leak detection system in the confined area between the primary and secondary walls, and all pressurized piping not provided with interstitial or continuous monitoring must have an emergency cutoff pressure monitor.

All USTs in the ground now will be required to meet the same requirements that apply to new USTs at the end of 10 years. During this 10 year time period, specific leak detection methods, designated by EPA, must be implemented within specific time limits dependent upon tank type (protection from corrosion or bare steel) and chemical content. An alternative method allows a combination of daily inventory control and periodic tank tightness testing.

Response to a leak or spill would be in two stages: immediate and long-term. The regulatory authority must be notified within 24 hours that there is a leak or spill, unless they are smaller than "reportable quantities" identified under CERCLA and they are immediately contained and cleaned up. Owners and operators of USTs are financially responsible for leaks, including the costs of cleanup, bodily injury, and property damage.

The applicability of local regulations is discussed in response to Comment No. 30.

As consistent with AFR 19.1, USAF will avoid or minimize the creation of wastes throughout the complete cycle of operations at SLC-7 and associated facilities and dispose of wastes that are created by reprocessing, recycling, and reusing when possible.

Comment No. 33: Methods that Will Be Used for Waste Minimization

Waste from SLC-7 would be consolidated through utilizing the existing VAFB hazardous waste accumulation system. Other mitigation measures are discussed below. As documented in the SLC-7 Waste Assessment (Environmental Solutions, Inc. 1989b), the following specific mitigation measures are discussed:

- Launch waste water would be recycled after being treated.
- Low metallic content paint would be used on surfaces that come into contact with launch wastewater.
- Hypergolic fuels and oxidizer residue would be separated from launch wastewater so that wastes are not mixed.
- Hypergolic fuels would be handled as follows:
 - Operational television coverage will be used to monitor propellant transfer activities.
 - Redundancy will be used wherever possible in order to provide a high level of system safety.
 - Proper training and frequent briefings will be provided to employees before they handle hypergolic fuels and oxidizers.
 - Engineering design will be used wherever possible to reduce the likelihood of a spill.

Facility engineering has not yet occurred that allows the development of additional, process-specific mitigation measures. However, in accordance with the DOD established goal of 50 percent reduction of hazardous waste by 1992, USAF will:

- Purchase fewer toxic and more nontoxic production materials;
- Inventory and trace all raw materials;
- Install equipment that produces minimal or no waste;
- Modify equipment to enhance recovery or recycling operations;
- Substitute nonhazardous for hazardous raw materials;
- Segregate wastes by type for recovery;
- Eliminate sources of leaks and spills;
- Separate hazardous from nonhazardous works; and
- Recycle onsite and offsite for reuse.

Comment No. 34: Commitment to Ensure Compliance with CERCLA-SARA if Hazardous Substances Are Found at the Proposed or Alternative Sites

The Final EIS will contain a commitment to ensure the following, should hazardous substances be located at any of the four alternative sites:

- Prompt notification of EPA, and compliance with all applicable requirements of CERCLA/SARA and the National Contingency Plan (NCP).
- No construction will occur until the requirements of CERCLA/SARA and the NCP have been fully satisfied.
- The USAF will coordinate with appropriate state and local agencies to determine their concerns on the identification, assessment, or cleanup of hazardous substances or hazardous waste.

These statements are noted in Section 3.0 of this Final EIS.

Comment No. 35: EPA's State Implementation Plan Call for Santa Barbara County

The EPA's May 1988 State Implementation Plan (SIP) call for Santa Barbara County will be added to Section 3.0 of this Final EIS.

Comment No. 36: Discussion of Air Quality Impacts

See Response to Comment No. 86.

Comment No. 37: Coordination of Air Quality Modeling with Santa Barbara County
Air Pollution Control District

Compliance with SBCAPCD specifications is addressed in Section 4.5.2.1, Cypress Ridge.
Also, see Response to Comment No. 36.

Comment No. 38: Coordination of Launch Schedule with Santa Barbara County
Air Pollution Control District

As noted in Section 4.5.2.1, Cypress Ridge, USAF utilizes the Toxic Hazard Corridor (THC) forecast to ensure that launch emissions do not pose unacceptable risks to human health and safety. Potential launch opportunities are limited due to the necessity to meet orbital requirements. Other launch constraints such as those suggested would impact the potential to meet mission requirements and, in turn, adversely impact national security.

Comment No. 39: Use of Chlorinated Fluorocarbons

As described in Section 3.5.3.2, Regulatory Environment, as directed by Engineering Technical Letter 88-8, USAF will utilize environmentally more acceptable chlorofluorocarbons wherever possible. This is consistent with EPA's rule making "protection of stratospheric ozone" (40 CFR Part 82.)

LETTER 3



United States Department of the Interior

OFFICE OF ENVIRONMENTAL PROJECT REVIEW
BOX 36098, 450 GOLDEN GATE AVENUE
SAN FRANCISCO, CALIFORNIA 94102

ER 89/646

SEP 15 1989

Mr. John Edwards
HQ Space Systems Division
Post Office Box 92960
Worldways Postal Center
Los Angeles, California 90009-2960

Dear Mr. Edwards:

This is in response to the request for the Department of the Interior's comments on the Draft Environmental Impact Statement (DEIS) for Space Launch Complex 7, Vandenberg Air Force Base, Santa Barbara County, California. We have the following comments to offer:

The DEIS is in fact one of the best we have reviewed in its treatment of cultural properties and the federal procedures for dealing with them.

[40] We are concerned about the extent of impacts to cultural resources on Vandenberg in the selection of a construction site for the Titan IV/Centaur space launch vehicle and urge consideration of an alternative that will preserve in situ as many sites as possible. Many years ago we recommended that a National Register District be created that would include all of Vandenberg Air Force Base and still feel this would be a more practical solution to dealing with the cultural resources there than your proposal (page 4-120) to create a district for South Vandenberg. We also concur that a top cultural resources priority at the Base is the preparation of a Historic Preservation Plan.

The following comments have been prepared under the authority of the Fish and Wildlife Coordination Act (48 Stat. 401, as amended; 16 U.S.C. et seq.), and other authorities mandating Department of the Interior concerns for environmental values. Since the Air Force is currently preparing a Biological Assessment in anticipation of formal Section 7 Consultation under the Endangered Species Act, we have focused our review on non-endangered fish and wildlife resources.

The proposed action is the construction and operation of a Titan IV/Centaur space launch complex on Cypress Ridge, south Vandenberg Air Force Base. In addition to the proposed site on Cypress Ridge, three alternative sites have also been considered (SLC-6, Vina Terrace, and Boathouse Flats). The project is designed for a minimum of 25 years, with construction planned to begin in 1990, followed by operations in 1994.

[41] Based on the extensive evaluation in the DEIS, the Fish and Wildlife Service concurs that there would be fewer impacts to fish and wildlife resources associated with the reconfiguration of SLC-6 than with the development of either the proposed Cypress Ridge site or the Boathouse Flats or Vina Terrace alternatives. Since no additional ground disturbance would be required with the use of the SLC-6 facility, impacts to vegetation and wildlife habitat from construction on the Base are not expected. On the other hand, selection of either of the other alternatives would result in the loss of 185 to 280 acres. Development of the proposed Cypress Ridge site would also result in the loss of about 800 to 1,000 mature individuals of the federal candidate species curly-leaved monardella (Monardella undulata var. frutescens), plus many more seedlings. Development at the Boathouse Flats location would result in the loss of approximately six acres of wetlands and 40 to 50 mature individuals of curly-leaved monardella plus seedlings.

Selection of any of the alternatives other than reconfiguration of SLC-6, including the proposed Cypress Ridge site, should include mitigation for losses of riparian wetlands and coastal scrub habitats. Mitigation plans should include creation of new wetland habitat for habitat lost, restoration and revegetation of disturbed coastal scrub habitats for habitat lost, and long-term monitoring of revegetation efforts. The Fish and Wildlife Service will be happy to coordinate with your staff in developing these plans.

[42] The DEIS has not considered the frequency of launches from the proposed facility in the analysis of impacts to vegetation and fish and wildlife resources. Estimates of the types and number of launches per year, and the cumulative effect of associated noise and disturbance and acidic deposition on fish and wildlife should also be included.

[43] The Fish and Wildlife Service has commented previously on the need for a comprehensive cumulative impact analysis from space launch programs on Vandenberg Air Force Base. There are several different programs on Vandenberg which involve launches of various space launch vehicles. The cumulative impacts of these various programs to fish and wildlife resources both on Vandenberg and within their zone of influence (i.e., Channel Islands) need to be addressed. Baseline impacts from existing space launch programs must be established before any additional impacts due to this project can be adequately addressed as required by the National Environmental Policy Act of 1969.

Specific Comments on the DEIS for Space Launch Complex 7

[44] Page 2-25 - More information is needed on the locations of the proposed borrow and spoil pits indicated in Figure 2.1.11. Borrow areas adjacent to the Santa Ynez River may contain riparian/wetland resources which could be impacted by borrow activity. This needs clarification.

[45] Page 3-45 - How were wetlands delineated for this analysis? Methods for delineation should be described.

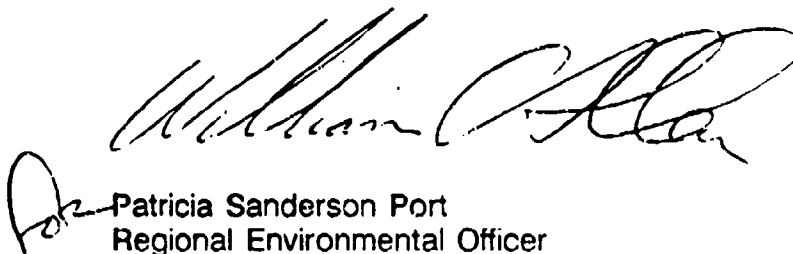
- [46] Page 3-49 - The Fish and Wildlife Service did not receive a biological assessment concurrent with release of the DEIS.
- [47] Page 3-51 - Information on use of rocky and sandy shorelines by marine birds should be updated.
- [48] Page 3-130 - Details of any spill prevention and cleanup plans for responding to accidents along the propellant transport route should be presented.
- [49] Page 3-136 - What assumptions were made in generating ground level HCL concentrations?
- [50] Page 4-24 - The Fish and Wildlife Service encourages the proposed design to avoid impacts to small wetlands along utility corridors.
- [51] Page 4-24 - Population estimates for Monardella undulata var. frutescens need to be updated.
- [52] Page 4-25 - Potential invasion of disturbed areas by exotic plants should be vigorously monitored and weeded as appropriate.
- [53] Page 4-27 - More information is needed on what kinds of impacts to vegetation (i.e., damage or loss) from the acidic deposition of HCL and also AL_2O_3 . If this information is not available, the Fish and Wildlife Service suggests that a monitoring plan be implemented to document these affects. This plan should be coordinated with monitoring plans being devised for other space launch programs.
- [54] Page 4-27 - Will seedlings be affected by this deposition?
- [55] Page 4-29 - How does fog and/or rainfall interact with acid which has been deposited on soils and vegetation? How long may any affects persist?
- [56] Page 4-30 - Define temporary disturbance.
- [57] Page 4-33 - The mitigation measures identified will require much elaboration. The Fish and Wildlife Service will be happy to assist the Air Force in developing specific mitigation plans.
- [58] Pages 4-35 through 4-47 - This discussion needs more elaboration and justification for the conclusions stated within. Among other things, estimates of the frequency of impacts (i.e., noise and disturbances from launches, and repeated acidic deposition) need to be incorporated into the analysis. Also, the individual sensitivity of various species affected should be analyzed. Since the opening remarks in this section state that impacts from launch noise and focused sonic booms and their short- and long- term impacts on marine birds and mammals are studied in detail in the Biological Assessment for this project, we will defer any detailed comments to our review of the Assessment.

- [59] Page 4-43 - What is meant by a "short" time?
- [60] Page 4-45 - The tidewater goby is not proposed for listing.
- [61] Page 4-54 - Cumulative impacts include other space launch programs operating at Vandenberg. This discussion needs quite a bit more elaboration.
- [62] Page 4-55 - The monitoring plans discussed need to be elaborated quite a bit. Specific plans for each resource impacted should be developed. The Fish and Wildlife Service will be happy to coordinate with the Air Force in developing such plans.
- [63] Page 4-173 - Unavoidable adverse effects to vegetation and wildlife should be described in more detail.

If you have any questions regarding cultural resources, please contact Holly Dunbar, National Park Service, at (415) 556-5190. For questions regarding fish and wildlife resources, please contact Ms. Donna Brewer, Fish and Wildlife Service, at (714) 643-4270.

Thank you for affording us an opportunity to comment on this document.

Sincerely,



For Patricia Sanderson Port
Regional Environmental Officer

cc:
Director, OEPR
Regional Director, NPS
Regional Director, FWS

RESPONSE TO LETTER 3

Received From: United States Department of the Interior
Patricia Sanderson Port, Regional Environmental Officer

Comment No. 40: Avoidance of Cultural Resources

The USAF is considering the alternative of modifying SLC-6 for the proposed action, an alternative which would avoid disturbance of cultural resources, as noted in Section 4.9.2.2, SLC-6. The appropriate boundary for a potential National Register District will be determined as a result of Section 106 consultations with the California SHPO and the ACHP.

Comment No. 41: Mitigation Measures for Loss of Habitat

The mitigation measures suggested for revegetation of the proposed and alternative sites are contained in Section 4.3.4, Mitigation Measures. Since wetlands would not be impacted, mitigation measures are not necessary. One of the primary planning tools for establishing mitigation measures for vegetation will be the erosion control and restoration plan. Participation of USFWS in the development of this plan is desirable and will be coordinated as appropriate.

Comment No. 42: Effects of Multiple Launches on Fish and Wildlife Resources

The analysis in the Draft EIS is structured around a targeted launch rate of three Titan IV/ Centaur vehicles in a year (Section 2.1.5, Launch Preparation and Operation, and Section 2.1.6, Overall Project Schedule and Personnel, establish the baseline launch rate of three per year for the life of the project). The analyses of potential project impacts address the effects of multiple launches in the following manner:

Vegetation. The operations subsections contained in Section 4.3, Vegetation, address the potential effects of multiple launches by drawing on information generated by empirical analyses undertaken at John F. Kennedy Space Center (Schmalzer, et al. 1986). Schmalzer et al. observed changes in species composition 30 months after the first space shuttle launch from Kennedy Space Center. During this time period, there were nine space shuttle launches from Pad 39A. It is from this analysis that the Draft EIS concludes that impacts to vegetation could include damage to sensitive species and change in vegetation cover type.

Wildlife - Acidic Deposition. The operations subsections contained in Section 4.4.2, Local Terrestrial and Aquatic Environment, also base impact conclusions on a launch rate of three vehicles per year. As noted on p. 4-43, impacts to terrestrial fauna are expected to be short term and insignificant, based on previous analyses of rocket operations from SLC-4 (Engineering Science 1987; Engineering Science and Sea World Research Institute 1988). The conclusions reached regarding Titan operations from SLC-4 were based on a total launch rate of seven vehicles per year (four Titan IV and three Titan II vehicles). It was concluded that, as a result of these launches, there would be only short-term and localized impacts to terrestrial and aquatic fauna based on previous experience with other launch programs. In addition, it was concluded that there would be no air emission-related impacts to marine mammals located on the Channel Islands. In addition, an analysis of acidic deposition into Honda Creek from launch operations was performed. This analysis showed that there would be sufficient buffering capacity present in Honda Creek to protect the unarmored three-spine stickleback. Since the buffering capacity of Honda Creek would be naturally reestablished prior to each subsequent launch, multiple launches would not create additional adverse impacts.

Marine Birds - Noise. Section 4.4.1, Regional Environment, contains a discussion of potential impacts to marine birds and mammals from noise associated with multiple launches from SLC-7. As cited in Section 4.4.1, Bowles and Stewart (1980) and Schreiber and Schreiber (1980) have studied the potential noise-related effects from multiple launches of the Space Shuttle to marine birds. It is expected that launch noise associated with the Titan IV would be equal to or less than that associated with the Space Shuttle (Section 4.4.1, Regional Environment). It was expected that shuttle launch frequency could reach as high as 20 per year, with operations lasting for nine years. Bowles and Stewart monitored marine bird populations on San Miguel and Prince Islands from 1979 to 1980 and concluded that the level of disturbance at that time did not have a measurable effect on marine bird populations on San Miguel Island and that there is no evidence that the increased rate of startle (from proposed Space Shuttle operations) would have any perceptible effect on the avifauna of San Miguel or Prince Islands. Schreiber and Schreiber note that the potential risks from single or multiple launches are nonexistent excepting a minimal risk of nest collapse for Cassin's auklet. They conclude that they do not expect more than normal annual fluctuations in critical factors such as changes in population levels, shifts in seasonal timing, and nesting success due to anticipated Space Shuttle operations.

Marine Mammals - Noise. Potential noise impacts to marine mammals from multiple launches from SLC-7 are addressed in Section 4.4.1, Regional Environment. As cited in Section 4.4.1, the analysis that Chappell (1980) undertook for the Space Shuttle program at VAFB showed that hearing loss would be expected to be short-term (as much as several days) following each shuttle launch, but with no cumulative effects to auditory systems. Bowles and Stewart (1980) analyzed the potential for startle based on their observations from 1979 to 1980 and found that there was no evidence of permanent haul-out or rookery abandonment from isolated stimuli, including sonic booms from rocket launches. In addition, because the stimulus from a sonic boom is short and not localized, there would be few relocations expected due to the high level of Space Shuttle activity. In addition, the analysis presented in Section 4.4.1 discussed the frequency of planned launches with regard to the potential for impacts during pupping season and found that the risks of mother-pup separation are small based on three launches per year.

Comment No. 43: Comprehensive Cumulative Impact Analysis

Consistent with NEPA, this EIS analyzes a major federal action and includes analyses of cumulative impacts. Other activities at VAFB are discussed to establish existing conditions and to determine cumulative impacts, as appropriate. As described in response to Comment No. 42, the SLC-7 analysis is based on a launch rate of three vehicles per year. This may be compared to the launch rate of 20 per year for the Space Shuttle from VAFB which resulted in an acceptable level of impacts.

In the Draft EIS, other activities at VAFB are considered in the description of the existing environment and in the determination of impacts where they are related to the proposed action. An example of this approach is for vegetation, where Section 3.3.1, Regional Environment, broadly discusses influences on vegetation and provides baseline acreage for each vegetation type that takes into consideration the lands required for other launch and support facilities. When cumulative impacts are discussed in Section 4.3.3, Cumulative Impacts, the impacts to vegetation from the existing South VAFB launch complexes (SLC-3, -4, -5, and -6) are considered in light of the additional increment of impact posed by the proposed project.

The best available source of information regarding impacts to wildlife resources on the Channel Islands is the body of work associated with the launch of the Space Shuttle from VAFB (see Response to Comment No. 42). These analyses include such diverse influences on existing animal behavior as airplane and helicopter overflights, missile operations, human intrusion, boat noise, and others. This body of knowledge provides much of the background for the

conclusions drawn about cumulative impacts to wildlife in the Draft EIS (Section 4.4.4, Cumulative impacts) and, with the analysis of the proposed action, is sufficient to address potential impacts. Additional information regarding cumulative impacts from VAFB operations may result from the launch monitoring program described in the Draft EIS. If future adverse impacts were found to be greater than expected, additional mitigation measures would be developed and implemented to address areas of concern.

Comment No. 44: Borrow and Spoil Pits

The potential borrow pits adjacent to the Santa Ynez River are no longer being considered as areas that would be utilized as a source of material for the construction of SLC-7. Changes to Figure 2.1.11 are noted in Section 3.0 of this Final EIS.

Comment No. 45: Delineation of Wetlands

The small wetlands west of Building 330 were delineated based on the boundary between the area supporting *Carex praegracilis*, *Juncus balticus*, *Juncus effusus*, and other hydrophytic plants, and the area dominated by upland plants. Wetlands in the project area were not delineated according to the Corps of Engineers Wetlands Delineation Manual, or its successor, the Federal Manual for Identifying and Delineating Jurisdictional Wetlands, which require examination of vegetation, soil and hydrology in most cases. Only vegetation was used as an indicator. Delineation according to the federal method was deemed unnecessary since all areas possibly subject to Corps of Engineers jurisdiction under Section 404 of the Clean Water Act would be avoided during construction of the overhead power line. Power poles would be placed away from riparian corridors and the small wetlands west of Building 330, and these areas would be spanned by the power lines.

Comment No. 46: Biological Assessment

Release of the Biological Assessment was postponed until after the release of the Draft EIS. The change to the text is noted in Section 3.0 of this Final EIS.

Comment No. 47: Marine Bird Information

In July of 1989, the USFWS performed a sea bird survey which updates the information contained in the Draft EIS of marine bird use of rocky and sandy shorelines in the project area. The results of this survey are not available to the public or other agencies at this time. If available, this information will be incorporated into the operations monitoring plan or other environmental documentation.

Comment No. 48: Transport Spill Prevention and Cleanup Plan

As consistent with CEQ Regulations (40 CFR Part 1508 et seq.) the discussion of the transport emergency response plan is not discussed in detail since information may be obtained from the plan described below. Transportation of hypergolic propellants is currently regulated under Department of Transportation (DOT) exemption E-3121 (for nitrogen tetroxide [N_2O_4]) and under DOT special approval number SA-860506 (for hydrazines). The N_2O_4 exemption requires the preparation of an emergency response plan since it is a Class A poison (poisonous gases or liquids of such a nature that a very small amount of the gas, or vapor of the liquid, mixed with air is dangerous to life). There are no requirements for an emergency response plan for hydrazines. The response plan for N_2O_4 specifies measures for protection of human health and safety and environmental resources and is coordinated with other federal, state, and local agencies.

Comment No. 49: HCl Concentration Assumptions

Figure 3.11.2, Titan IV/Centaur Normal Launch HCl Isopleths (p. 3-136), is shown for illustrative purposes only since it is for assumed conditions at a future, unspecified launch. The HCl isopleths shown are the output of the REEDM computer air dispersion model which is run in a real-time mode just prior to launches from VAFB. REEDM utilizes launch-specific meteorological data as inputs for model runs rather than assumptions about ambient conditions. REEDM combines known information about HCL output from normal launches and launch anomalies with real meteorological conditions to predict ground-level HCl concentrations.

Comment No. 50: Avoidance of Wetlands

Wetlands along utility corridors will be avoided by placing power poles so that they do not impinge upon or cause indirect impacts to the wetlands areas in the utility corridors. An engineering survey has been made of this area and it has been determined that small adjustments in pole spacing would be feasible and sufficient to avoid impacts to wetlands areas.

Comment No. 51: *Monardella undulata* var. *frutescens* Populations

The only information on population estimates of *Monardella undulata* var. *frutescens*, available since the development of the Draft EIS, is an estimate of the total number of individuals of this taxon destroyed by construction of the Peacekeeper in Rail Garrison project on the San Antonio Terrace on VAFB. The Environmental Assessment for this project estimated that 14,339 plants would be destroyed. This approximation was based on estimates presented in the Biological Assessment for the proposed MX Flight Test Program (HDR 1980). There were no actual counts made of the number of plants lost during construction, nor is there any information at this point regarding the success of revegetation efforts involving this plant (Tetra Tech 1989). The Nature Conservancy, which is studying populations of *Monardella* and several other plants on VAFB, does not have any population information on this plant (The Nature Conservancy 1989).

Comment No. 52: Exotic Plant Invasion

As noted on p. 4-33, the Erosion Control and Restoration Plan would specify measures to control the invasion of exotic plants from construction disturbance. The USFWS will be coordinated with in the development of this plan.

Comment No. 53: Impacts to Vegetation from HCl and Al₂O₃

Information regarding the impacts to vegetation from acidic deposition and aluminum oxide (Al₂O₃) from Titan IV launches is sparse since so few launches have occurred. Some preliminary additional information about potential impacts to vegetation from Titan IV launch-related acidic deposition was collected at the first Titan IV launch from Cape Canaveral Air Force Station (CCAFS) (USAF 1989). The launch report notes that a field investigation of the area under and around the predicted exhaust cloud path (predictions taken from the REEDM

model) did not note any acidic deposition in either the near or far-field regions. In addition, none of the acid spotting or aroma characteristics of Space Shuttle launches were noted by pad area workers. It appears that the present deluge system does not use sufficient water to generate a ground cloud of the size generated by a Space Shuttle launch. Due to similarities in the amounts of water used at CCAFS and VAFB for Titan IV launches, the analysis undertaken in the Draft EIS may overstate potential impacts since it assumes impacts to be on the magnitude of Space Shuttle launches.

Additional information about SLC-7 launch impacts to vegetation from acidic deposition and Al_2O_3 will be gathered as per the launch monitoring plan discussed in Section 4.3.4, Mitigation Measures (p. 4-33). The USFWS will be consulted in the development of this plan.

Comment No. 54: Impacts to Vegetation Seedlings from HCl and Al_2O_3

Seedlings of *Monardella undulata* var. *frutescens* surrounding the mature individuals would also be affected by deposition, should it occur. For additional information on acidic deposition, see response to Comment No. 53. The number of mature individuals was given in reference to the numbers in Draft EIS Figure 3.3.5.

Comment No. 55: Acidic Interaction with Fog and/or Rainfall

Changes in impacts to vegetation due to meteorological conditions would depend on the type of conditions and their timing relative to acidic deposition.

Schmaltzer et al. (1986) indicates that high relative humidity or misting of plants prior to exposure to HCl increased plant damage compared to dry exposure to HCl gas. If rain or high humidity were to occur following exposure to HCl gas, presumably some dilution effect would be noted and impacts might abate. However, the largest proportion of the impacts discussed in Section 4.3, Vegetation, would be from wet acid deposition near the launch pad which would not depend upon the presence of moisture for activation and subsequent plant damage. If rain were to occur following such deposition, some dilution effect might occur.

Additional information regarding these types of impacts may be produced through the launch monitoring program (see response to Comment No. 53).

Comment No. 56: Temporary Disturbance

The text should read "Temporary disturbance to habitat for 50 to 100 mature individuals." Temporary disturbance refers to the project construction period. The plants themselves could be avoided altogether with careful planning of power line pole locations and with monitoring. The appropriate change to page 4-30 of the text is noted in Chapter 3.0 of the Final EIS.

Comment No. 57: Mitigation Measures

See response to Comment No. 53.

Comment No. 58: Impacts to Wildlife

See response to Comment No. 42 for information on multiple launch effects. The information presented in Sections 4.4.1, Regional Environment, and 4.4.2, Local Terrestrial and Aquatic Environment, is summarized from the SLC-7 Biological Assessment as per the requirements of NEPA for content and brevity.

Comment No. 59: Definition of Short Time

It is expected that terrestrial biota exposed to the air pollutants present in the Titan IV/Centaur exhaust plume would be subject to irritation of exposed areas that would last a matter of hours. Additional information about these types of effects may be generated as a result of the proposed operations monitoring. See response to Comment No. 53.

Comment No. 60: Status of Tidewater Goby

This change is noted in Section 3.0 of this Final EIS.

Comment No. 61: Cumulative Impacts

See response to Comment No. 42.

Comment No. 62: Monitoring Plan

See response to Comment No. 53. The USFWS will be consulted in the development of this plan.

Comment No. 63: Unavoidable Adverse Effects to Vegetation and Wildlife

The discussion of unavoidable adverse effects to vegetation and wildlife are discussed briefly in Section 4.17.2, Other Unavoidable Adverse Effects, since they were not identified as significant. Additional discussion of impacts to vegetation are contained in Section 4.17.1, Significant Unavoidable Adverse Effects, which summarizes the impacts to *Monardella undulata* var. *frutescens*, a category 2 species.

LETTER 4

2-39

MARINE MAMMAL COMMISSION

1625 EYE STREET, N.W.
WASHINGTON, DC 20006

11 September 1989

Mr. John Edwards
HQ Space Systems Division
P.O. Box 92960
Worldways Postal Center
Los Angeles, CA 90009-2960

Dear Mr. Edwards:

The Marine Mammal Commission, in consultation with its Committee of Scientific Advisors on Marine Mammals, has reviewed the Draft Environmental Impact Statement (DEIS) for the Construction and Operation of Space Launch Complex 7 at Vandenberg Air Force Base, California. We offer the following comments and recommendations concerning the assessment of the possible effects of the proposed action on marine mammals.

General Comments

The DEIS indicates (pp. 3-51 through 3-54) that six species of pinnipeds, 25 to 30 or more species of cetaceans, and the southern sea otter occur in or near areas that could be affected by construction and operation of Space Launch Complex 7. It notes (pp. 4-52 and 4-53) that marine mammals could be disturbed or otherwise affected by construction activities, by vessels carrying construction supplies (if supplies are transported over ocean rather than land routes), by fuel and chemical spills, by noise from rocket launches and subsequent sonic booms, by exhaust gases emitted by the rockets, and by falling bits of metal and fuel in the event that a rocket has to be destroyed during or soon after launch. It concludes on p. 4-41 that some marine mammals could be affected, particularly by loud sonic booms, and that a "small incidental take permit" may be required. It does not indicate the number of the various species of marine mammals that might be affected, what proportion of local and/or regional marine mammal populations might be affected, whether any of the potentially affected species or populations are being affected by other human activities (e.g., being caught and killed during commercial [64] fishing operations, or being disturbed by offshore oil and gas exploration and development), and what if any steps will be taken to verify the predicted effects, detect possible unforeseen effects, and avoid or minimize the possible adverse effects of both construction and operation of the facility on marine mammals.

Disturbance and injury of harbor seals, sea lions, sea otters, or other marine mammals would constitute taking which is prohibited by the Marine Mammal Protection Act. Section 101(a)(5) of the Act provides that the Secretaries of the Interior and Commerce may authorize the taking of small numbers of marine mammals as described in the DEIS if, after notice and opportunity for public comment, the Secretary finds that the take would have a negligible impact on the affected species or population stock(s) and prescribes regulations setting forth, among other things, requirements pertaining to the monitoring and reporting of such taking. Thus, without reliable information on the number as well as the species of marine mammals that might be affected, and how those species or population stocks are being affected by other human activities, it will not be possible to make the findings necessary to obtain a "small take" exemption.

[65]

Specific Comments

P. 1-10 (Marine Mammal Protection Act): This section should be expanded to note that the Marine Mammal Protection Act of 1972 established a moratorium on the taking of marine mammals and that, if it is determined that the proposed action could result in the taking of marine mammals, the Air Force will be required to seek a waiver of the moratorium on taking, or a "small take" exemption as provided for by Section 101(a)(5) of the Act.

[66]

P. 2-60, par. 1: This paragraph states that "[t]he primary effects on marine mammals are anticipated to be minor, short-term hearing loss and/or startle responses that could result in the mammals running to water..." and "[a]mong the four pinniped species that breed on San Miguel Island (California sea lion, harbor seal, northern fur seal, and Guadalupe fur seal), the nature of the startle response would probably differ among each of the species." The rationale for the statement that the primary effect would be minor, short-term hearing loss and/or startle responses is not self-evident from information presented in the DEIS. That is, while the DEIS cites references which support and justify concluding that launch noise and sonic booms could result in short-term hearing loss and/or startle responses, neither the cited references nor information provided in the DEIS appear to justify the conclusion that these would be the primary effects and that the effects likely would be minor (e.g., the DEIS does not provide convincing evidence that noise from launches would not cause harbor seals to abandon haul-out and pupping sites along the shoreline of Vandenberg Air Force Base, or that fuel spills or exhaust gas emissions would not be toxic and adversely affect the food webs of which harbor seals and other marine mammals are a part.). In addition, of the four pinniped species mentioned, only the California sea lion, the harbor seal, and the northern fur seal commonly breed (or pup) on San Miguel Island. Conversely, the northern elephant seal, a species not mentioned, is known to breed and pup on San Miguel Island.

[67]

[68] Pp. 2-73 to 2-78 (Summary of Cumulative Impacts): As currently drafted, this and other sections of the DEIS dealing with cumulative impacts do not appear to consider or take into account the full range of human activities that may be affecting marine mammals and other ecosystem components that could be affected by the proposed activity. There is no mention or discussion, for example, of how pinniped populations in the area have been or are being affected by other military activities in the area, by commercial fisheries, by offshore oil and gas exploration and development, etc.

[69] P. 2-81 (Item 2.5.4.6): This entry in the table appears to indicate that a monitoring program will be established to assess the impacts of operational noise and air emissions on wildlife. The DEIS does not provide a clear description of the nature, scale, or length of monitoring programs planned or being considered. Because of the uncertainty concerning both the immediate and the long-term effects of the proposed action on marine mammals, it would be desirable and appropriate to include a marine mammal monitoring program as part of the proposed action. Therefore, if it has not already been done, the Marine Mammal Commission recommends that the Air Force consult the National Marine Fisheries Service and the Fish and Wildlife Service to determine the immediate and long-term monitoring programs that would be required to verify the predicted effects and to detect the possible unforeseen effects of the proposed action on marine mammals, particularly harbor seals, California sea lions, and elephant seals that pup and breed in areas that could be affected by the proposed action.

[70] Pp. 3-51 to 3-54 (Marine Mammals): This section, in concert with Appendix B, identifies the species of marine mammals that could be affected by the proposed action. As noted earlier, neither it nor other sections of the DEIS indicate the numbers of various species of marine mammals that might be affected by the proposed action. Consequently, there is insufficient information to judge the likely significance of possible effects.

[71] This section should be expanded to indicate, among other things, the pupping seasons of pinnipeds known to pup in areas that could be affected by the proposed action. To avoid or minimize possible adverse effects, launch operations should be scheduled, as possible, to avoid periods when pupping or breeding could be affected.

[72] This and other relevant sections of the DEIS also should be expanded to note and take into consideration that, during sea otter surveys conducted in the spring of 1989 by the Fish and Wildlife Service and the California Department of Fish and Game, 20 sea otters, including females with pups, were seen between Pt. San Luis and Pt. Conception.

[73] P. 3-63, pars. 2 and 3 (Marine Mammals): This section notes that there are several sizeable harbor seal haul-out and breeding sites along the shoreline near the proposed Cypress Ridge site. The DEIS does not, but should, provide an assessment of the possibility that construction and operation of the proposed Cypress Ridge launch complex would cause seals to temporarily or permanently abandon or avoid these haul-out sites and the effects that such a response might have on population size and productivity. In this context, it is important to consider that there may be a number of more or less discrete populations or subpopulations of harbor seals along the California coast, that some or all of the populations or subpopulations may be at or near carrying capacity, and that seals that leave or are forced out of their home areas may move to nearby sites already occupied, cause densities at these sites to exceed carrying capacity, and cause even more animals to be affected.

[74] P. 4-35, last paragraph: Among other things, this paragraph notes that the short- and long-term impacts of launch noise and focused sonic booms are described in the SLC-7 Biological Assessment (Environmental Solutions Inc. 1989b). Many of the conclusions set forth in the DEIS appear to be based on this document. I would be grateful, therefore, if you could send us a copy.

[75] Pp. 4-52 to 4-54 (Marine Mammals): For the reasons noted earlier, this section and other sections of the DEIS should be expanded to indicate the numbers as well as species of marine mammals that possibly could be affected.

[76] P. 4-173, par. 2 (Unavoidable Adverse Effects on Wildlife): The first sentence in this section states that: "[t]he noise and sonic boom resulting from a launch event would be expected to adversely affect marine birds, pinnipeds, and terrestrial wildlife." This statement does not appear to be fully consistent with other statements in the DEIS which, as noted above, indicate that effects on pinnipeds and other marine mammals are not expected to be significant.

Summary

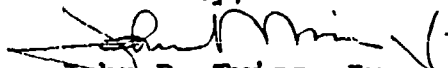
In summary, the DEIS does not provide a complete assessment of the possible impacts of the proposed action on marine mammals. Among other things, it does not provide an assessment of the numbers of various marine mammal species that possibly could be affected, or how the effects might be compounded by such things as offshore oil and gas exploration and development, and incidental take during commercial fishing operations. In addition, it does not provide a clear indication of the uncertainties concerning the possible effects of construction and operation of the proposed launch complex or the monitoring program that would be conducted to verify the predicted effects and detect any possible unforeseen effects on marine mammals.

Because of the uncertainties concerning the possible effects of the proposed actions on marine mammals, it would be desirable and appropriate to expand the proposed action to include both short- and long-term monitoring programs designed to verify the predicted effects and detect the possible unforeseen effects of the proposed action on marine mammals. Consequently, if it has not already been done, the Commission recommends that the Air Force consult the National Marine Fisheries Service and the Fish and Wildlife Service to determine how to most cost-effectively monitor marine mammal distribution, densities, productivity and behavior, in concert with construction and operation of the proposed launch facilities, to verify the predicted effects and detect the possible unforeseen effects of the proposed action on marine mammals.

* * * * *

If you or your staff have questions about our comments or recommendation, please let me know.

Sincerely,


John R. Twiss, Jr.
Executive Director

cc: Nancy Foster, Ph.D.
Mr. Jeffrey D. Opdycke

RESPONSE TO LETTER 4

Received From: Marine Mammal Commission - John R. Twiss, Jr., Executive Director

Comment No. 64: Marine Mammals Population that May Be Impacted and Other Population Influences

The species of marine mammals that may be impacted by the proposed project are shown in Table B.10 of Volume II (Appendices) of the Draft EIS. The proportion of local and/or regional marine mammal populations that might be affected is expected to be small, as described in Sections 4.4.1, Regional Environment, and 4.4.3, Local Marine Environment. To quantitatively estimate the proportions of populations that may be impacted is difficult due to the dynamics of marine mammal behavior. Populations of marine mammals fluctuate every year by virtue of activities like pupping and breeding on a rookery, moulting on a beach, or migrating through an area. In addition, some of the populations change on a secular time scale such as the logarithmic growth of California sea lions and elephant seals over the past several decades, and the influx of here-to-fore exotic populations like the bottlenose dolphin as a result of meso-scale changes in oceanography.

The effect of other human activities on marine mammal populations in the region is difficult to assess. There is no comprehensive measure of this effect. Information on the effects of human activities might be gleaned from records of beach-cast animals maintained by a few museums in California and possibly from records in marine mammal rehabilitation centers. There are isolated studies of particular species where coastal fisheries seem to have had an impact on population numbers (e.g., sea otters and harbor porpoise).

Causes of population change cannot be correlated specifically to any single set of factors such as human impact or food supply/productivity. Hence the Steller sea lion population has dwindled and California sea lions and elephant seal populations have grown abundantly. Gray whales have increased in number and, in recent years, there has been a consistent seasonal presence of humpback and blue whales.

The steps that will be taken to verify and minimize predicted impacts are described in Section 4.4.5, Mitigation Measures. These steps include construction and operations monitoring and restriction of offsite activity by construction personnel. The monitoring plans will be developed in consultation with USFWS and NMFS to ensure that impacts will be

minimized. In addition, an incidental take permit may be necessary for marine mammals. The conditions specified in this permit (as determined in consultation with USFWS and NMFS) would also ensure that impacts to marine mammals would be minimized.

Comment No. 65: Information Necessary for "Small Take" Exemption

Additional information regarding potential impacts to marine mammals is being provided to USFWS and NMFS in a Biological Assessment as a part of the formal Endangered Species Section 7 consultation process. This process will determine if sufficient information is available for findings to be made and if an incidental take permit for marine mammals is required.

Comment No. 66: Marine Mammal Protection Act

See response to Comment No. 5.

Comment No. 67: Impacts to Marine Mammals

The conclusion drawn in the comparative analysis summary of impacts at the proposed and alternative sites (Section 2.3.4, Wildlife) indicates that the primary effects on marine mammals are anticipated to be minor, short-term hearing loss and/or startle responses that could result in the mammals running to water. These impacts are characterized as minor since they are below the significance levels described in Section 4.4, Wildlife. As discussed in Section 4.4, Wildlife, the conclusion that the primary effects would be short-term hearing loss and/or startle responses is based on the analyses undertaken in support of Space Shuttle operations from VAFB, which is the best scientific information available at this time.

Potential noise impacts to harbor seals are addressed in Section 4.4.2.1, Cypress Ridge, where it is noted that the maximum A-weighted sound level expected from a Titan IV/Centaur launch is 110 dBA outside of the launch complex, a level well below that analyzed for noise impacts to pinnipeds on the Channel Islands. As noted in Section 4.4.1, Regional Environment, the expected impacts to pinnipeds on the Channel Islands are short-term hearing loss and/or startle responses. Studies of pinnipeds on the Channel Islands in support of the Space Shuttle found no evidence of dangerous leaping, self-damage, crushing, or breeding colony abandonment for

marine mammals as a result of sonic booms or loud overflights. Since noise levels are much lower along the VAFB shoreline, it would be expected that impacts to pinnipeds would be less than those noted for the Channel Islands.

Potential impacts to marine mammals due to fuel spills and exhaust gas emissions are discussed in Section 4.4.3.2, Marine Mammals. Potential impacts were determined not to be significant. In addition, as discussed in Section 4.4.5, Mitigation Measures, should the External Tank Landing Facility become a major point for delivery of equipment, material, or supplies, spill containment and cleanup facilities would be made available to contain and remove spilled substances.

The northern elephant seal is discussed in terms of existing environment and potential impacts Sections 3.4.1.3, Marine Mammals, and 4.4.1.3, Marine Mammals, respectively. Naming the Guadalupe fur seal in 2.3.4, Wildlife, as a pinniped species breeding on San Miguel Island is an error. The text should instead name the northern elephant seal as a species that breeds on San Miguel Island. The appropriate change in the text of page 2-60 is noted in Section 3.0 of this Final EIS.

Comment No. 68: Cumulative Impacts to Marine Mammals

See responses to Comment Nos. 64 and 42. There are no additional data available to characterize potential effects by industry such as off-shore oil and gas exploration and development or commercial fisheries.

Comment No. 69: Marine Mammal Monitoring Program

As noted in responses to Comment Nos. 1, 3, and 15, and in Section 4.4.5, Mitigation Measures, an operations monitoring program, which will include marine mammals, will be developed in consultation with NMFS and USFWS. In addition to the harbor seal, California sea lion, and northern elephant seal, the monitoring program will include the northern fur seal and sea otter.

Comment No. 70: Marine Mammal Population Information

As described in response to Comment No. 64, the number of marine mammals that may be impacted fluctuate widely by time of year and, in addition, will change from current population levels by the time the project is operational. The significance of the potential effects is determined based on scientific information that indicates that the effects to individuals would be temporary and that the viability of marine mammal populations would not change. In addition, the Threatened and Endangered Species Section 7 consultation process ensures that the potential impacts would not affect species viability.

Comment No. 71: Pinniped Pupping Seasons

See response to Comment No. 12 for information regarding pinniped pupping and breeding seasons. Adverse effects will be minimized through the mitigation measures indicated in Section 4.4.5, Mitigation Measures, and through the proposed monitoring program.

Comment No. 72: Sea Otters

Section 3.4.1.3 discusses the sea otter's presence in the region. In addition to the 20 animals seen in the spring of 1989, sea otters have been regularly seen along this stretch of coast for a decade or longer. The additional text for page 3-53 regarding sea otters is contained in Section 3.0 of this Final EIS.

Comment No. 73: Harbor Seal Haul-out Site Abandonment

The potential construction-related impacts to harbor seals is discussed in Section 4.4.3.2, Marine Mammals. There is no published evidence that suggests either a single continuous population or a number of discreet sub-populations of harbor seals along this part of the California coast. In addition, the home area of a harbor seal is not known. The only information on these populations is contained in the California Department of Fish and Game (CDFG)/NMFS census data. There is some indication the seals may move along the coast from one site to another. If this occurs naturally, then the idea of seals moving to nearby sites and thereby upsetting the capacity of an area to support a population is moot. The present tagging work of CDFG/NMFS may provide insight regarding movements of seals in the Point Conception/ Point Arguello area.

Comment No. 74: Copy of Biological Assessment

A copy of the Biological Assessment will be sent to the Marine Mammal Commission.

Comment No. 75: Marine Mammal Population

See response to Comment No 64.

Comment No. 76: Consistency of Marine Mammal Impact Conclusions

As discussed in Section 4.17, Unavoidable Adverse Effects, and response to Comment No. 67, adverse effects such as short-term hearing loss and startle responses are expected to occur. Review of these impacts against the criteria for significance (Section 4.4, Wildlife) shows that, although adverse, the expected impacts are not considered significant.

LETTER 5

2-49



US Department
of Transportation
**Federal Aviation
Administration**

Western Pacific Region

P.O. Box 92007
Worldway Postal Center
Los Angeles, CA 90009

September 7, 1989

Department of the Air Force
HQ Space Systems Division
P.O. Box 92960
Worldway Postal Center
Los Angeles, CA., 90009-2960

Attention: Mr. John Edwards

Dear Mr. Edwards:

[77] We have coordinated the review of the Draft Environmental Impact Statement for Space launch Complex 7 at Vandenberg AFB, California, within our regional office, and have not received any adverse comments.

We appreciate the opportunity afforded us for reviewing the subject Draft EIS.

Sincerely,

Barry S. Brayer
Manager, Planning & International Aviation Staff, AWP-4

RESPONSE TO LETTER 5

Received From: U.S. Department of Transportation, Federal Aviation Administration
Barry S. Brayer, Manager, Planning and International Aviation Staff, AWP-4

Comment No. 77: Review of Draft EIS

Comment noted.



State of California
GOVERNOR'S OFFICE
OFFICE OF PLANNING AND RESEARCH
1400 TENTH STREET
SACRAMENTO 95814

GEORGE DEUKMEJIAN
GOVERNOR

(916) 323-7480

DATE: September 11, 1989

TO: Department of the Air Force
HQ Space Systems Division
P. O. Box 92960
Worldways Postal Center
Los Angeles, CA 90009-2960
ATTN: Mr. John Edwards

FROM: Office of Planning and Research
State Clearinghouse

RE: Draft Environmental Impact Statement, Construction and Operation of Space
Launch Complex 7, Vandenberg Air Force Base, Santa Barbara County (SCH 89072807)

As the designated California Single Point of Contact, pursuant to Executive Order 12372, the Office of Planning and Research transmits attached comments as the State Process Recommendation.

[78] This recommendation is a consensus; no opposing comments have been received. Initiation of the "accommodate or explain" response by your agency is, therefore, in effect.

Sincerely,

A handwritten signature in black ink, appearing to read 'Robert P. Martinez'.

Robert P. Martinez
Director

Attachment

cc: Applicant

RESPONSE TO LETTER 6

Received From: State of California Governor's Office of Planning and Research
Robert P. Martinez, Director

Comment No. 78: Single State Agency Point of Contact Comments

The consensus recommendation of no opposing comments is noted.

LETTER 7

2-53

Resources Building
1416 Ninth Street
95814

(916) 445-5656
TDD (916) 324-0804

California Conservation Corps
Department of Boating and Waterways
Department of Conservation
Department of Fish and Game
Department of Forestry
Department of Parks and Recreation
Department of Water Resources

GEORGE DEUKMEJIAN
GOVERNOR OF
CALIFORNIA



THE RESOURCES AGENCY OF CALIFORNIA
SACRAMENTO, CALIFORNIA

Air Resources Board
California Coastal Commission
California Tahoe Conservancy
California Waste Management
Board
Colorado River Board
Energy Resources Conservation
And Development Commission
San Francisco Bay Conservation
and Development Commission
State Coastal Conservancy
State Lands Division
State Reclamation Board
State Water Resources Control
Board
Regional Water Quality
Control Boards

Department of the Air Force
HQ Space Systems Division
P. O. Box 92960
Worldways Postal Center
Los Angeles, CA 90009-2960
ATTN: Mr. John Edwards

September 11, 1989

Dear Mr. Edwards:

The State has reviewed the Draft Environmental Impact Statement, Construction and Operation of Space Launch Complex 7, Vandenberg Air Force Base, Santa Barbara County, submitted through the Office of Planning and Research.

We coordinated review of this document with the California Highway Patrol, the California Coastal Commission, the Central Coast Regional Water Quality Control Board, and the Departments of Fish and Game, Health Services, Parks and Recreation, and Transportation.

[79] The Central Coast Regional Water Quality Control Board replied directly in correspondence dated August 9, 1989. The California Coastal Commission will require a consistency determination.

Thank you for providing an opportunity to review this project.

Sincerely,

A handwritten signature in cursive script that reads "Gordon F. Snow".

Gordon F. Snow, Ph.D
for Assistant Secretary for Resources

cc: Office of Planning and Research
1400 Tenth Street
Sacramento, CA 95814
(SCH 89072807)

RESPONSE TO LETTER 7

Received From: The Resources Agency of California
Gordon F. Snow, Ph.D.

Comment No. 79: California Coastal Commission (CCC) Consistency Determination

As noted in Section 1.5.3.2, a SLC-7 Federal Consistency Determination has been prepared and submitted to the CCC.

LETTER 8

2-55

STATE OF CALIFORNIA

GEORGE DEUKMEJIAN, Governor

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD — CENTRAL COAST REGION

1102 A LAUREL LANE
SAN LUIS OBISPO, CALIFORNIA 93401
(805) 549-3147



August 9, 1989

Mr. John Edwards
HQSSD/DEV
P.O. Box 92960
Los Angeles, CA 90009-2960

Dear Mr. Edwards:

SUBJECT: VANDENBERG AIR FORCE BASE, PROPOSED SPACE LAUNCH COMPLEX
7, ENVIRONMENTAL IMPACT REPORT

We reviewed the draft environmental impact statement (EIS) for the subject project dated July 20, 1989. The specific plan as proposed, involves either modification of Space Launch Complex 6 (SLC-6) or construction and operation of (SLC-7), to accommodate launches for the Titan IV/Centaur. Either alternative to the proposed plan would occur on South Vandenberg Air Force Base, Lompoc, California.

The main aspects requested to be addressed in the EIS were presented in our letter to Mr. Robert Mason, dated May 23, 1988. This letter summarized that our major regulatory responsibilities included discharges to land or surface waters which may affect ground or surface water quality. Our recommendation was that the EIS address all potential ground or surface water quality concerns. Our comments on the EIS are as follows:

- [80] 1. Page 4-81. It is stated that the RWQCB requires an investigation of the preferred location for the domestic wastewater ponds to ensure compliance with Resolution No. 83-12. It should be brought to your attention that this resolution pertains only to septic tanks and subsurface disposal systems and not evaporation/percolation ponds. Instead, the disposal system should be designed to comply with waste discharge requirements adopted by the Regional Board. A report of waste discharge should be submitted and existing waste discharge requirements revised to include the proposed domestic waste discharge.
- [81] 2. Page 4-82. The City of Lompoc's landfill is classified as a Class III landfill. References in the EIS to "Lompoc Class II Landfill" should be changed accordingly.

Mr. John Edwards

-2-


August 9, 1989

- [82] 3. Regarding the potential impacts to water quality from launch exhaust ground clouds, we found that potential acid deposition on the evaporation/percolation ponds was not addressed. The EIS estimates that acid deposition of 7.89 gal/acre near the launch area could be expected from the exhaust cloud. The problem of acidifying these ponds during the launchings and the long term affect from percolation into the soil should be considered.

[83] Methods described for the disposal of industrial wastewaters were well outlined. Either of the options considered are acceptable, whether it be transportation to the existing SLC-6 site in tanker trucks, or the construction of a waste treatment system at SLC-7. It is expected that after launch an estimated 106,000 gallons of water could be recovered for storage/reuse. Because of ground water overdraft conditions in the Lompoc Basin and, due to the low average precipitation of the area, it is highly encouraged that the industrial waste treatment process be extended to include recycling of treated water. This would allow for the maximum in water resource conservation.

Should you have any further comments or questions, please refer them to Mr. Bill Meece or Mr. Jay Cano at this office.

Very truly yours,


WILLIAM R. LEONARD
Executive Officer

EIR/VAFB0727

GDM:sm

cc: Colonel Morris, Environmental Task Force, 1 STRAD/ET,
Vandenberg AFB, CA 93437-5000
Peggy O'Halloran, Santa Barbara County Environmental Health
Services
State Clearinghouse

RESPONSE TO LETTER 8

Received From: California Regional Water Quality Control Board, Central Coast Region -
William R. Leonard, Executive Officer

Comment No. 80: Interpretation of Resolution No. 83-12 (Subsurface Disposal Systems)

The interpretation of Resolution No. 83-12 as contained in Section 4.6.2, Local Impacts (pp. 1-19, 1-20, and 4-81), is misconstrued since the resolution applies only to septic tanks and subsurface disposal systems. The discussion of the California Porter-Cologne Water Quality Act (Section 1.5.5.3, California Porter-Cologne Water Quality Act) will be revised to include the requirement for a report of waste discharge permit. These changes to the Draft EIS are noted in Section 3.0 of this Final EIS.

Comment No. 81: Classification of City of Lompoc Landfill

The City of Lompoc's landfill should be identified as a Class III facility (pp. 3-85, 4-82, and 4-90). These changes to the Draft EIS are noted in Section 3.0 of this Final EIS.

Comment No. 82: Acidification of Evaporation/Percolation Ponds

Acidification of the SLC-7 evaporation/percolation ponds, as proposed, would occur as a result of the acidic deposition associated with Titan IV/ Centaur launches. To address this issue, USAF will analyze methods of siting or designing the ponds or structures associated with the ponds so that pH levels are maintained at an acceptable level (as outlined in California Regional Water Quality Control Board, Central Coast Region Order No. 89-88 or other agreement). This analysis will be coordinated with RWQCB and the Report of Waste Discharge permit process.

Comment No. 83: Recycling Treated Launch Waste Water

In response to public comment, additional mitigation measures for water use have been developed. In preliminary analyses of water use and potential supplies for operations at the proposed SLC-7, it has been determined that launch deluge water (approximately 146,000 gallons per launch) can be provided from recycled water supplies. To provide SLC-7 with a stock of recycled launch deluge water, waste waters would be collected from other locations on

VAFB, treated by utilizing the SLC-6 waste water treatment plant, and held at the water storage tank(s), located as shown in the Draft EIS in Figure 2.1.7 (Preliminary Utility Corridors and Construction Areas: Proposed Alignment) until needed for launches. This water would be used during construction for dust control and other non-potable purposes, thereby reducing ground water demand. This action would decrease demand during operations for water from the Lompoc Terrace ground water basin by approximately 1.3 acre-feet per year.

The additional potential demand for water from the Lompoc Terrace is for sanitary and other uses for personnel stationed at SLC-7 throughout the year. This estimate for potential additional demand was generated by utilizing a consumption rate of 40 gallons per person per day. As noted in the Draft EIS (Section 4.2.4, Mitigation Measures), USAF will utilize low water use fixtures on facilities constructed for SLC-7 to reduce water demands. In addition, USAF will analyze alternative methods of enhancing water supplies such as desalinization of sea water and utilizing recycled water for non-potable uses such as toilets and other fixtures. USAF will undertake the appropriate measures as recommended in the analysis.



LETTER 9

2-59

County of Santa Barbara AIR POLLUTION CONTROL DISTRICT

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JAMES M. RYERSON
Air Pollution Control Officer

WILLIAM A. MASTER
Assistant Director

August 31, 1989

John Edwards
HQ SSD/DEV
PO Box 92960
Los Angeles, CA 90009-2960

RE: Draft EIS on VAFB's SLC-7 (7/20/89)

Dear Mr. Edwards:

Thank you for giving the Santa Barbara County Air Pollution Control District an opportunity to review the EIS for VAFB's Space Launch Complex 7 (SLC-7). Our comments are grouped below into General Comments and Specific Comments. We also provide comments on the EIS's adequacy in addressing our 5/17/88 scoping comments.

GENERAL COMMENTS

G1. The overall format of the document is very confusing to the reader. The current format does not allow for a specific issue area to be reviewed in depth without searching through the entire document. Each issue area (e.g., air quality) should be addressed entirely within one section. The Air Quality Section should cover each of the following topics:

1. Environmental setting;
2. Description of proposed project and alternatives;
3. Emissions of criteria and toxic/non-criteria pollutants;
4. Impacts of:
 - Inert pollutants,
 - Reactive pollutants,
 - Toxic pollutants,
 - Odor, and
 - Visibility;
5. Mitigation measures;
6. AQAP consistency; and
7. Stratospheric air quality.

The discussion of impacts should include both the proposed project and all applicable alternatives.

G2. Throughout the document, there are many impacts which are claimed to be insignificant without adequate reference or discussion of the basis for this determination. Blanket

statements of insignificance have little meaning without supporting information to allow verification. As the document stands, the reader is not able to verify the claims made regarding the impacts from the proposed project and alternatives. Further information is needed to create a full disclosure document, as required by NEPA.

- G3. There is a major problem with the value quoted in the EIS for 1-hour NO_2 impacts. Further, there is no quantitative basis from which to compare the impacts between the proposed project and alternatives since no air quality modeling was performed in the EIS.

The NO_2 value cited in the EIS (354 ug/m^3) is from a report titled *Evaluation of Existing Meteorological Data in Support of SLC-7 Authority to Construct Pre-Construction Monitoring (PCM) Data Requirements*. This report was conducted independently of the EIS solely for the purpose of evaluating PCM sites in conjunction with the District's ambient air monitoring requirements for the Authority To Construct (ATC) permit. The report does not meet the requirements of an Air Quality Impact Assessment (AQIA) and therefore is not acceptable for assessing the significance of air quality impacts. Three major requirements were not met:

- [86]
1. The modeling in the report did not assess all pollutants and averaging periods of concern.
 2. The report did not compare the highest modeled NO_2 concentration to the appropriate air quality standard. (The NO_2 concentration cited in the EIS [354 ug/m^3] represents the highest mean value of the high five 1-hour NO_2 concentrations).
 3. The ozone limiting methodology in the report (calculating NO_2 impacts from hourly values of ozone and NO_2) only applies when assessing PCM data requirements. For AQIA purposes, the highest monitored values for ozone and NO_2 should be used to determine the NO_2 impact from the proposed project.

A valid AQIA should be performed for both the proposed project and each alternative. Without this modeling, there is insufficient data to determine potential air quality impacts, and to compare alternatives.

- G4. The Impact Summary Tables (pp. 2-73 through 2-78) should be revised to include Class I, II, III, and IV impact classifications. For each issue area, impacts for the proposed project and all alternative scenarios should be grouped by impact classification as follows:

- [87]
- Class I: Significant, cannot be mitigated to a level where they are not significant.

- Class II: Significant, can be mitigated to a level where they are not significant.
- Class III: Adverse but not significant.
- Class IV: Beneficial impacts.

A suggested format for the tables would be to include the following information (listed from left to right in the table):

1. A description of the impact;
2. The location and scope of the impact;
3. The appropriate mitigation measure to be implemented (including reference to where the measure is detailed in the EIS);
4. The government agency responsible for the mitigation; and
5. The residual impact after mitigation.

The proposed project and each alternative should be listed vertically under each issue area. This type of format would allow for a clear and concise summary of the impacts and mitigation measures associated with the proposed project and alternatives.

SPECIFIC COMMENTS (Volume I)

Section 1: Introduction

Section 1.5.4: Air Quality

1. Page 1-14, last para.

[88] 1. Next to last sentence. The EIS states that there are no deadlines to attain the California Ambient Air Quality Standards (CAAQS). This is not true. The California Clean Air Act (CCAA), adopted in 1988, requires that nonattainment areas reduce nonattainment pollutants or their precursors by 5% per year until attainment is met. The CCAA thus requires documented progress toward attainment of the CAAQS.

[89] 2. Last sentence. The EIS states that the District has not adopted AAQS more stringent than the CAAQS. This is not true. District Rule 310 prohibits emissions of H₂S that result in a 3-minute average ambient concentration greater than 0.06 ppm of H₂S.

[90] 2. Page 1-15, Table 1.5.1 (Ambient Air Quality Standards). The footnotes for this table are missing.

[91] 3. Page 1-16, 2nd para, 2nd sentence. The EIS states that northern Santa Barbara County has historically been in

attainment of both the NAAQS and the CAAQS. In checking records since 1983, the VAFB Watt Road station has recorded a minimum of 1 state violation every year. In the North County, between 1986 through 1988, the state ozone standard was exceeded on 73 days and the federal ozone standard was exceeded on 8 days. In addition, during April and May 1989, the federal ozone standard was exceeded on at least 3 days in the Lompoc/Vandenberg area.

The District's PSD monitoring stations measured 22 exceedances of the state 24-hour PM₁₀ standard in North County from 1986 through 1988. Prior to 1986, PM₁₀ was not monitored much in this area.

- [92] 4. Page 1-16, 2nd para., last sentence. The EIS states that North County will continue to be a federal attainment area for ozone and PM₁₀ until the EPA redesignates it nonattainment. EPA has recently stated its intent to expand the nonattainment area for ozone to include the entire county. In addition, the Santa Barbara-Santa Maria-Lompoc area was recently included in EPA's press release of areas failing to meet the federal ozone standard.

Furthermore, the California Air Resources Board (ARB) has formally designated the entire county nonattainment for both ozone and PM₁₀. They have also designated a portion of North County as nonattainment for H₂S.

- [93] 5. Page 1-16, 3rd para., 4th sentence. The EIS states that the District will soon declare North County nonattainment for PM₁₀, due to violations of the CAAQS for this pollutant. The District already has recognized that PM₁₀ is nonattainment in North County. In 1988, a review of the preceding 3 years of monitoring data revealed that the state PM₁₀ standard had been exceeded 107 times; this included exceedances in North County. With this information, the District initiated preparation of a State Implementation Plan for PM₁₀, and began to regulate PM₁₀ and its precursors as a nonattainment pollutant. (Letter dated 4/19/88 to the APCD Board of Directors)

- [94] 6. Page 1-16, last para., 1st sentence. The EIS should reflect that the District is empowered to enforce not only the national ambient air quality standards (NAAQS) per the federal Clean Air Act, but also the California AAQS per the recently enacted California Clean Air Act.

- [95] 7. Page 1-16, last partial sentence. In this sentence, the EIS describes the measures the District could take to improve air quality. This description should be reworded to reflect the following phased approach the District normally follows in implementing new emission control rules.

1. Retrofit existing sources with new controls.

2. Tighten the New Source Review (NSR) rule:

- Make smaller sources subject to it.
- Require more stringent control beyond Best Available Control Technology (BACT).

3. Implement technology-forcing rules.

- [96] 8. Page 1-17, 2nd full para., 1st sentence. This sentence should be modified to state that all new or modified stationary sources which emit or may emit nonattainment pollutants are subject to the NSR rule.
- [97] 9. Page 1-17, 2nd full para., last sentence. The document states that "once a unit has been constructed and verified to be in compliance with SBCAPCD regulations, a PTO is issued". Issuance of a PTO (Permit to Operate) is not automatic: an application for a PTO must first be submitted to the District.
- [98] 10. Page 1-17, last para., 3rd sentence. This sentence should be corrected to state that the required input to air quality models includes 1 year of representative ambient air quality and meteorological data. The 4th sentence in this paragraph should be deleted.
11. Page 1-19, 2nd para. The EIS states that the 1 year of preconstruction monitoring data must be "descriptive" of the proposed project location. In fact, this monitoring data must be representative. This term is defined in the District's *Air Quality and Meteorological Monitoring Protocol*.
- [99] In January 1989, the District determined that the locations of the Pt. Arguello and Jalama Beach monitoring stations would provide suitable meteorological data for the Air Quality Impact Analysis (AQIA). At that time, the District also determined that the maximum air quality values measured at any of the 3 stations mentioned in the EIS (Pt. Arguello, Jalama Beach, and SLC-6) over the previous 3 years could be used for background air quality. It has not been determined whether the preconstruction monitoring requirements of data recovery and representativeness (collected in the 3 years prior to ATC approval) have been met. It is VAFB's responsibility to supply data that meet these specifications.
- [100] 12. Page 1-19, 3rd para. The EIS states that "VAFB has a large inventory of emission offset credits 'banked' with SBCAPCD which, if available, could be applied against any emissions increases attributable to operation of SLC-7". VAFB's 1984 *Emissions Offset and Banking Agreement* states (p. 3) that "if banked emissions are not used within 6 months, they shall expire". Furthermore, within the last year the

banking provision in District Rules was deleted. The document should be revised accordingly.

- [101] 13. Page 1-19, 4th para., 2nd sentence. The EIS states that the individual sources and characteristics of emissions from SLC-7 would not vary in relation to the site which is eventually chosen. While this may be true, the site chosen does affect the selection of a location for preconstruction monitoring. The preconstruction monitoring locations were chosen based on a particular source (project) location. If this source location is changed, the project would need to be remodeled using the new location. The proposed location for preconstruction monitoring would then be re-evaluated based on the results of this modeling.

Section 2: Proposed Action and Alternatives

Section 2.1.3.5: Safety Systems

- [102] 14. Page 2-22, last para., RE: Quantity-Distance Criteria. The "safety clear zones" referred to here do not appear to be shown in Figure 2.1.2 (Proposed Cypress Ridge Site and Alternatives) for existing space launch complexes.

Section 2.3.5: Air Quality

- [103] 15. Page 2-62, 1st para, last sentence. Please provide references for the "previous studies" mentioned in this paragraph.
- [104] 16. Page 2-62, 2nd para. In the discussion at the bottom of the paragraph, please provide reference to where the calculations of construction emissions are provided.
- [105] 17. Page 2-63, 1st full sentence. Again, please provide reference to where more detailed information on the "operational control procedures" are documented.

Section 2.3.11: Health and Safety

- [106] 18. Page 2-69, 2nd para. The "1981 Study" referred to here should be fully referenced.
- [107] 19. Page 2-69, 3rd para. Following the phrase "Toxic Hazard Corridor" there should be a reference to p. 3-128 where this term is explained.

Section 2.4: Summary of Cumulative Impacts

20. Page 2-74, Section 2.4.5 (Air Resources). This table does not adequately summarize all the impacts from the proposed project and alternatives.
- [108] 1. Without air quality modeling, it is impossible to compare impacts (NO₂, CO, SO₂, PM₁₀) between the proposed project and alternatives.
- [109] 2. A comparison of emissions is not an adequate substitute for the results of a site-specific AQIA.

[110] 3. The operational NO_x and ROC emissions from the proposed project and alternatives may contribute to existing ozone standard exceedances and should be documented as such.

[111] 4. This table should present Class I, II, III, and IV impacts as stated in comment G4.

Section 2.5: Summary of Mitigation Measures

[112] 21. Page 2-81, Section 2.5.5 (Air Resources). This table should be deleted and combined with the impact summary tables per comments G4 and 20.

Section 3: Affected Environment

Section 3.5: Air Quality and Meteorology

[113] 22. Page 3-67. The EIS should note that there is a substantial climatic difference between the coastal areas of south and north Santa Barbara County (divided by Point Conception). For example, the climate at Point Arguello is substantially different than the climate at Santa Barbara Harbor.

[114] 23. Page 3-67, 2nd para, last sentence. High ozone values have been measured in Santa Barbara County primarily during post-Santa Ana conditions. However, this is not the only circumstance when high ozone values have been recorded locally. The reference USAF 1988b, *Environmental Assessment for the Titan IV Space Launch Vehicle Modifications and Operations*, is cited here. Does this assessment document high ozone occurrences in Santa Barbara County?

[115] 24. Page 3-71, 3rd para, last sentence. Inland sources are not the only sources of pollutants in the area. There are substantial sources along the coastal areas, offshore, and at VAFB. Also, the District is currently studying PM₁₀ occurrence in the County to determine the actual source contributions.

[116] 25. Page 3-71, last para. The EIS discusses attainment only with respect to the federal standards. Please discuss the area's attainment in relation to state standards, too.

[117] 26. Page 3-71, last para., 2nd sentence. This sentence should read: In the past, air quality monitoring stations in northern Santa Barbara County have measured exceedances of the federal ozone and PM₁₀ standards. Southern Santa Barbara County has been officially designated by the EPA as nonattainment for ozone. See also comment 4.

[118] 27. Page 3-71, last para., last sentence. The EIS states that recently North County exceeded the NAAQS for ozone. The federal ozone standard was exceeded in North County on 8 days from 1986 through 1988, with violations occurring in all years during that period.

[119] 28. Page 3-72, 1st 2 paras. The document discusses only federal designations of nonattainment status. Consideration should also be given to state nonattainment designations (i.e., the California Clean Air Act designations of July 1989). Ambient ozone and PM₁₀ values should also be discussed in relation to the CCAA regulations.

[120] 29. Page 3-73, Table 3.5.1 (Measured Air Quality Data Summary). Data presented in this table are not current. Data through mid-1989 are available and should be used in this table.

[121] 30. Page 3-76, 3rd para., last 2 sentences. The EIS states that localized pollutant concentrations can exceed recorded levels at the SLC-6 site due to the cumulative effect of other sources during the night when wind speeds are low. It continues to say that "these conditions would not be expected to persist due to higher wind speeds during daytime hours". This statement is misleading. There is no guarantee that wind speeds will be higher during the day than at night. Furthermore, such stable conditions need to persist for only one hour for a 1-hour standard (e.g., NO₂) to be exceeded.

Section 3.11: Health and Safety

[122] 31. Page 3-125, RE: Regional Environment. The EIS should include a clear explanation of how county and city emergency response agencies will be notified of any aborted flights, as well as all incidents likely to affect the general public's safety. The EIS should also explain how ISTRAD and WSMC will cooperate with these agencies in handling such incidents.

[123] 32. Page 3-128, RE: Special Safety Procedures. This section should state what criteria are used to define the "Toxic Hazard Corridors". Are the concentrations used the "Immediately Dangerous to Life and Health" (IDLH) values, "Threshold Limit Values" (TLVs), "Time Weighted Averages" (TWA), or are they other criteria?

[124] 33. Page 3-129, RE: Hypergolic Transportation Safety, 2nd para. This paragraph indicates SLC-4 West and SLC-4 East requirements for fuel and oxidizer. It should also include: the projected number of shipments for SLC-7, and the truck vessel size, or quantity of fuel in each shipment.

[125] 34. Page 3-134, RE: WSMC Range Safety Procedures. The model output from the REEDM model should be provided to the county emergency response agencies following any aborted launches. (See p. 3-135, Meteorological Restrictions.)

Section 4: Environmental Consequences and Mitigation Measures

- [126] 35. Page 4-63, 4th para. Please refer to comment G3 which discusses the problems with the statements in this paragraph and the modeling analysis.
36. Page 4-69, 1st partial para. The EIS states that since the emission rates of several pollutants (CO, SO_x, PM₁₀, and ROC) would be lower relative to their state standards (the CAAQS, California Ambient Air Quality Standards) than those for NO_x, their contribution to cumulative impacts would therefore be insignificant. This reasoning is not technically sound.
- [127] As mentioned in comment G3, the modeling (for evaluation of PCM stations) cited in the EIS is not appropriate for evaluation of the proposed project (SLC-7). Therefore, any comparisons to this modeling are not valid. To properly quantify the impacts associated with the proposed project and alternatives, site-specific air quality modeling should be performed for all pollutants and averaging times of concern.

EIS'S ADEQUACY IN ADDRESSING APCD SCOPING COMMENTS

The following comments address the EIS' adequacy in responding to the District's 5/17/88 scoping comments. The comment numbers identified below correspond to the comments in our original letter (attached).

- [128] 37. Comment 1.C (emission impacts should be modeled). The EIS did not model emission impacts for either the proposed project or the alternatives. This point is also noted above.
- [129] 38. Comment 2 (emission offsets should be clearly identified). The EIS' treatment of the offset issue is far too general.
- [130] 39. Comment 3 (an air quality analysis for the proposed project should be done). An air quality analysis (i.e., modeling) for the proposed project was not done in the EIS.
- [131] 40. Comment 5 (cumulative impacts should address the expected number of launches per year at VAFB, characterizing both the launch location and type of space launch vehicle). The expected number of launches per year at VAFB was not characterized either in terms of the launch location or the type of space launch vehicle. The EIS presents only a summary of total VAFB emissions relative to those from SLC-7.
- [132] 41. Comment 6 (offsite impacts, such as those from transporting fuel for the Titan Centaur to VAFB, should be addressed). The EIS does not appear to address the impact of transporting fuel to the base for the Titan Centaur.

- [133] 42. Comment 7 (the need for SLC-7 in light of potential Congressional action to put VAFB's existing launch facilities in "caretaker" status should be discussed). This point was not discussed in the EIS.

If you have any questions on these comments, please contact me.

Sincerely,

Deborah S. Pontifex

Deborah S. Pontifex
Responsible Agency Review

AQPLAN\IARCORR\VAFB2.WP5

Attachment: APCD 5/17/88 scoping comments on EIS

cc: David Tomsovic, EPA/Region IX, w/ attachment
Morris Gary, APCD
Ivor John, APCD
Tom Murphy, APCD
Duane Sikorski, APCD
Jean Thomson, APCD
VAFB SLC-7 EIS file, w/ attachment
PLNG Chron file



County of Santa Barbara

AIR POLLUTION CONTROL DISTRICT

2-69

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JAMES M. RYERSON
Air Pollution Control Officer

WILLIAM A. MASTER
Assistant Director

May 17, 1988

Department of the Air Force
HQ Space Division/DEV
PO Box 92960
Los Angeles, CA 90009-2960

ATTENTION: Mr. Robert Mason

REGARDING: Scoping Comments on the EIS for Titan Centaur SLC-7

Dear Mr. Mason:

The District is pleased to respond to your request for comments on the scope of the EIS for the construction and operation of the space launch complex 7 (SLC-7) for the Titan Centaur space launch vehicle. Our comments on the proposed project are presented below.

1. Emissions.

- A. The EIS should discuss emissions separately for each of the three phases of the project: construction, "activation", and operations, as defined in the project description.
- B. The EIS should quantify all emissions associated with each phase of the project by specific emission source.
- C. Emissions should be presented for both peak-hour and for short-term average conditions. Emission impacts should be modeled and compared with the national, state and District ambient air quality standards and allowable air quality increments.
- D. Emissions of toxic air pollutants, as identified by the Air Resources Board and the Environmental Protection Agency, should be clearly identified and quantified. Some of these toxic compounds may require a risk assessment.

2. Offsets.

Proposed sources of emission offsets, and the corresponding level of emission reduction as required by District Rules and Regulations, should be clearly identified in the EIS.

3. Status of Criteria Pollutants.

The EIS should present the air quality analysis for the proposed project in the context of the following pollutants being regulated under New Source Review by District rules: ozone, PM₁₀ (particulate matter with aerodynamic diameter less than or equal to 10 microns), and their precursors.

4. Emergency Response Planning Associated With Hazardous and Toxic Materials.

- A. The storage and handling procedures for all hazardous and toxic materials associated with the project should be discussed in detail, particularly in light of the recent (5/4/88) explosion of a space shuttle fuel plant in Henderson, Nevada.
- B. Emergency response procedures in the event of an accident on the ground or immediately after liftoff of the Titan Centaur should also be discussed in detail. (VAFB has experienced an explosion of its Titan series rocket on at least one occasion in the recent past.)

The EIS should propose appropriate mitigation measures for items (A) and (B), where necessary to protect the health and welfare of the residents of Santa Barbara County and adjoining areas.

Additional safety-related concerns to be addressed in the EIS include:

- o The proposed route to VAFB for transporting fuels for the Titan Centaur, and safety procedures associated with this transport; and
- o Safety procedures to protect personnel aboard offshore platforms in the Titan Centaur's flight path, as well as contingency plans should an accident occur in flight.

5. Cumulative Impacts.

The EIS should address the cumulative air quality impact of launches from SLC-7 in combination with launches from other existing launch facilities at VAFB. The expected number of launches per year at VAFB should be characterized in terms of both the launch location and type of space launch vehicle.

6. Offsite Impacts.

Potential impacts associated with the project that may occur outside VAFB's borders (e.g., transportation of the fuel for the Titan Centaur) should be discussed with respect to location and magnitude of impact.

7. Need for the Project.

The need for a new space launch complex at VAFB at this time should be discussed in light of a potential Congressional decision to put existing space launch facilities at VAFB in "caretaker" status..

The District appreciates this opportunity to comment on the scope of the EIS. We would like to continue to be involved at regular and frequent intervals during preparation of the EIS. We can offer the Air Force significant personnel expertise on air quality issues specific to this project which would improve the quality of the environmental analysis. To this end, we would like to develop a funding mechanism with VAFB to ensure our continued participation.

Sincerely,

Deborah S. Pontifex

Deborah S. Pontifex
Interagency Liaison

JMR/kj
4429C

cc: Jeffrey Harris, RMD
Susan Strachan, County Office of Disaster Preparedness
(VAFB SLC-7 File)
Responsible Agency Review File
MSED Chron File

RESPONSE TO LETTER 9

Received From: County of Santa Barbara, Air Pollution Control District,
Deborah S. Pontifex, Responsible Agency Review

Comment No. 84: Environmental Impact Statement Format

The format of the Draft EIS was developed to be consistent with the CEQ Regulations, Section 1502.10, Recommended Format. The recommended format and corresponding chapters in the Draft EIS are as follows:

CEQ Format

- Cover Sheet
- Summary
- Table of Contents
- Alternatives Including the Proposed Action
- Affected Environment
- Environmental Consequences
- List of Preparers
- List of Agencies, Organizations, and
Persons to Whom Copies of the Statement
Are Sent

Draft EIS Section

- Cover Sheet
- Summary
- Table of Contents
- The Proposed Action and Alternatives
(Chapter 2.0)
- Affected Environment (Chapter 3.0)
- Environmental Consequences and
Mitigation Measures (Chapter 4.0)
- List of Preparers (Chapter 5.0)
- List of Recipients of Draft EIS
(Chapter 7.0)

Comment No. 85: Significance of Impacts

The Draft EIS is more than a full disclosure document; it is designed to be used by Federal officials in conjunction with other material to plan actions and make decisions (CEQ Regulations, Section 1502.1). As per requirements of the CEQ Regulations (Sections 1500.1, 1500.2, 1500.4, 1501.7, 1502.1, and 1508.26), the Draft EIS builds on the identification of significant issues through the scoping process, analyzes those and other issues, and discusses them in proportion to their significance. The Draft EIS is analytic rather than encyclopedic and emphasizes portions that are useful to decision makers and the public. Additional technical information is available from the supporting documents, such as the Risk Assessment, which are referenced throughout the Draft EIS.

Conclusions about the significance of an impact are based on the context and intensity of the impact (CEQ Regulations, Section 1508.26). Among other things, conclusions take into consideration the unique characteristics of the area (such as threatened or endangered species

of plants and animals), controversy (such as concerns raised regarding water resources), uncertainty or risks (such as impacts to human health and safety), cumulative impacts, and others as consistent with CEQ Regulations, Section 1508.26. Where previous analyses in other reports have covered issues raised, these analyses have been referenced and briefly summarized. The criteria by which the significance of impacts are evaluated are discussed for each resource evaluated in Chapter 4.0 of the Draft EIS.

Comment No. 86: Nitrogen Dioxide Impact Value

USAF recognizes SBCAPCD's desire to review detailed air quality modeling results for each of the SLC-7 alternative sites. However, evaluations of air contaminant emission sources proposed for SLC-7 as discussed in the Draft EIS, have been performed consistent with NEPA and the CEQ guidelines to determine if there is the potential for significant environmental impacts to result from the construction and operation of SLC-7. Proposed sources of air contaminant emissions for SLC-7 (hydrogen flares, hypergolic vapor control systems, and emergency electrical power generator) are minor, have been permitted by SBCAPCD at other VAFB SLCs, and have been demonstrated by SBCAPCD-approved source testing to operate within specifications dictated by SBCAPCD.

SBCAPCD regulations require that best available control technology (BACT) must be applied to all sources of air contaminant emissions proposed for SLC-7. In addition, no permits to construct or operate SLC-7 will be issued by SBCAPCD unless all emission increases due to the construction and operation of SLC-7 can be demonstrated to be fully offset, resulting in a net benefit to air quality.

Detailed air quality modeling of the type requested is required to be performed as part of an AQIA in support of an Authority to Construct (ATC) permit application submitted to SBCAPCD. Permits to construct or operate SLC-7 will not be issued unless the results of the AQIA demonstrate that air contaminant emissions resulting from the construction and operation of SLC-7 will not contribute to the violation of any ambient air quality standards in the region.

With respect to comparison of the proposed alternatives on the basis of potential air quality impacts, the three alternative locations for SLC-7 are situated in the same general vicinity (separated approximately one mile). Therefore, it is reasonable to assume that potential impacts of SLC-7 upon regional air quality will be similar, regardless of the alternative selected. The

alternative sites are all within 2,000 feet of terrain features that are in excess of the tallest stack heights currently anticipated for construction at SLC-7. Therefore, localized air quality impacts would be similar for each of the proposed alternatives.

In summary, NEPA guidelines require that the level of analysis be consistent with the magnitude of the environmental impacts anticipated. The sources of air contaminant emissions proposed for SLC-7 are minor and will be assured by the SBCAPCD permitting process to have no impact on local or regional air quality. The detailed air quality modeling requested by SBCAPCD will be performed in support of SLC-7 permit applications. No significant differences in potential local or regional air quality impacts are expected relative to the proposed siting alternatives.

Comment No. 87: Cumulative Impact Summary Table

Section 2.4 is intended to concisely provide decision makers and the public with a summary of the cumulative impacts that would result if the project were implemented at the proposed or alternative sites. The table is structured by resource so that it is consistent with the format of the Draft EIS so that sections of the document may be easily referred to for additional detail regarding impacts. In addition, the table is designed to compare cumulative impacts to each resource across the alternatives. Mitigation measures are placed in a separate section (Section 2.5, Summary of Mitigation Measures) so that the responsible agency, the USAF, can easily understand the mitigation measures discussed in the body of the document.

The impact classification system suggested is not a requirement of NEPA and the CEQ Regulations, and need not be included in the Draft EIS or in an EIR. However, the information summarized by the classifications is contained in the document in both the Summary and Chapter 4.0 (Environmental Consequences and Mitigation Measures).

Comment No. 88: Deadlines for Attainment of California Ambient Air Quality Standards

Text for the air quality portions of the Draft EIS were prepared prior to passage of the California Clean Air Act (CCAA). The CCAA mandates that nonattainment areas reduce nonattainment pollutants or their precursors by five percent per year until attainment is achieved. The amended text that discusses the CCAA is contained in Section 3.0 of this Final EIS.

Comment No. 89: Santa Barbara County Air Pollution Control District Rule 310

USAF agrees that SBCAPCD has adopted ambient air quality standards that are more stringent than those in the California Ambient Air Quality Standards. The amended text that discusses SBCAPCD ambient air quality standards is contained in Section 3.0 of this Final EIS.

Comment No. 90: Footnotes for Table 1.5.1

The footnotes to amend Table 1.5.1 are included in Section 3.0 of the Final EIS.

Comment No. 91: Historical Attainment Status of Northern Santa Barbara County

The discussion on page 1-16 of the Draft EIS was prepared in mid-1988 on the basis of information supplied by SBCAPCD. The conclusions derived in Section 1.5.4.1 of the Draft EIS regarding the attainment status of North Santa Barbara County with respect to ozone, PM₁₀, and their precursors are in full agreement with SBCAPCD's description of present attainment status. All air quality evaluations performed in support of the Draft EIS assumed that ozone, PM₁₀, and their precursors are nonattainment pollutants.

Comment No. 92: Federal Attainment Status for Northern Santa Barbara County

See response to Comment No. 91.

Comment No. 93: PM₁₀ Attainment Status for Northern Santa Barbara County

See response to Comment No. 91.

Comment No. 94: Santa Barbara County Air Pollution Control District Enforcement of California Ambient Air Quality Standards

See response to Comment No. 88. Amended text for page 1-14 that discusses the CCAA is included in Section 3.0 of the Final EIS.

Comment No. 95: Santa Barbara County Air Pollution Control District Implementation of New Emission Control Rules

The potential corrective measures listed in Section 1.5.4.2 of the Draft EIS were presented as USAF's best interpretation of steps which SBCAPCD could take to improve air quality. A more encompassing description per SBCAPCD Regulations of potential corrective measures would include:

- Retrofit existing sources with new controls.
- Tighten the New Source Review (NSR) rule:
 - Make smaller sources subject to it.
 - Require more stringent control beyond Best Available Control Technology.
- Implement technology-forcing rules.

Comment No. 96: New Source Review Applicability

Amended text that discusses new source review requirements is included in Section 3.0 of the Final EIS.

Comment No. 97: Issuance of Permit to Operate

Amended text that discusses the issuance of a permit to operate is included in Section 3.0 of the Final EIS.

Comment No. 98: Data Input to Air Quality Models

Amended text for page 1-17 that discusses input to air quality models is included in Section 3.0 of the Final EIS.

Comment No. 99: Description of Preconstruction Monitoring Data

Amended text for page 1-19 responding to SBCAPCD's interpretation of a disparity between the terms "descriptive" and "representative" is included in Section 3.0 of the Final EIS.

SBCAPCD has indicated that data collected at either the Point Arguello or Jalama Beach station are representative of the Cypress Ridge site. A letter dated January 27, 1989, from SBCAPCD to VAFB regarding this subject states (SBCAPCD 1989):

The District has determined that meteorological data collected at either the Point Arguello or the Jalama Beach monitoring station locations can provide data representative of the reasonable worst-case meteorological conditions at the proposed project site for use in the Air Quality Impact Analysis (AQIA).

USAF has previously acknowledged that it will accept responsibility for ensuring that data required for use in the AQIA satisfy SBCAPCD's standards for acceptance and data recovery.

Comment No. 100: Emissions Offset and Banking Agreement

It is USAF's understanding that emissions offset credits enumerated in VAFB's 1984 "Emissions Offset and Banking Agreement" are valid and fully available for use by SLC-7 and other VAFB projects. The Banking Agreement was signed and executed as a binding legal agreement between SBCAPCD and VAFB and was adopted by SBCAPCD's Board of Directors on November 5, 1984. The agreement predates SBCAPCD's 1988 deletion of the banking provision in their regulations. Discussions regarding emissions offset credits necessary for SLC-7 will be conducted prior to submittal of an ATC application for SLC-7 to SBCAPCD.

Comment No. 101: Preconstruction Monitoring for Alternative Sites

As noted in the response to Comment No. 36, the SLC-7 alternative sites are in the same vicinity and have common critical terrain features. If one of the alternatives is selected for construction of SLC-7, USAF agrees that modeling analyses would be required to determine whether the existing data sets for Point Arguello and Jalama Beach are representative of each of the alternative sites. The USAF believes that these analyses would demonstrate that either data set would be representative of reasonable worst-case meteorological conditions at each of the alternative sites.

Comment No. 102: Safety Zones for Figure 2.1.2 (Proposed Cypress Ridge Site and Alternatives)

The text on page 2-22 should state that the safety clear zone shown in Figure 2.1.2 (Proposed Cypress Ridge Site and Alternatives) is for the Cypress Ridge Site. This change is noted in Section 3.0 of the Final EIS.

Comment No. 103: Previous Air Quality Studies

Table 4.5.2 of the Draft EIS demonstrates that, at most, SLC-7 operational emissions are expected to be one percent of current annual VAFB emissions. Information cited in "Final programmatic environmental assessment for commercial expendable launch vehicle programs" (US DOT 1988) indicates that VAFB contributes one to two percent to recorded regional emissions.

Comment No. 104: Calculation of Construction Emissions

The discussion of fugitive dust emissions from SLC-7 and SLC-6 construction activities in Section 2.3.5 and 4.5.2.1 of the Draft EIS is in error. Modifications to pages 2-62, 4-60, and 4-66 appear in Section 3.0 of the Final EIS.

Estimated fugitive dust emissions from construction operations for SLC-7 were calculated on the basis of the US EPA's emission factor for heavy duty construction operations, 1.2 tons of particulate matter per acre per month of activity. It was assumed that during a worst-case construction year 34 acres would be disturbed, and approximately 50 percent of the total particulate emissions would be controlled by watering. Furthermore, it was assumed that 50 percent of the total suspended particulate matter is less than 10 microns in diameter (PM₁₀). Total PM₁₀ emissions from construction activities at SLC-7 are estimated to be approximately 122.4 tons per year.

It is estimated that approximately 5.2 tons of PM₁₀ would be emitted during the modification of SLC-6, assuming 2.9 acres of disturbed area (SLC-6 launch mount), six months of heavy construction activity, and utilizing the same emission factor, control due to watering, and fraction of PM₁₀ as for SLC-7 construction emission calculations.

Comment No. 105: Information on Operational Control Procedures

As cited on page 2-20, safety systems and procedures are defined in a number of documents. The following specifically address the launch procedures for meteorological restrictions:

USAF. 1985. Western Space and Missile Center (Air Force Systems Command) Regulation 127-1, Range Safety Requirements, Vandenberg Air Force Base, California. May.

USAF. 1976. 1st Strategic Aerospace Division (Strategic Air Command) Regulation 127-200, Missile Mishap Prevention, Vandenberg Air Force Base, California. October.

Comment No. 106: 1981 Study

As shown on page 3-29, the 1981 study cited here is:

Madrone Associates. 1981. Environmental assessment for a new hypergolic propellant storage facility, Vandenberg Air Force Base, California. June.

Comment No. 107: Toxic Hazard Corridor Explanation

The requested reference to the location of the discussion of the Toxic Hazard Corridor procedure has been added to page 2-69. The corrected text is shown in Chapter 3.0 of the Final EIS.

Comment No. 108: Comparison of Air Quality Impacts at Proposed and Alternative Sites

See response to Comment No. 36.

Comment No. 109: Necessity for Site-Specific Air Quality Impact Analysis

See response to Comment No. 36.

Comment No. 110: Relationship between Operational NO_x and ROC Emissions and Ozone Standard Exceedances

The USAF acknowledges that SBCAPCD Rule 310, which prohibits emissions of H₂S that result in a three-minute average ambient concentration greater than 0.6 ppm, is more restrictive than the California Ambient Air Quality Standard for H₂S (0.3 ppm, one-hour average concentration). Page 1-14 of the Draft EIS has been amended as suggested and is included in Section 3.0 of the Final EIS.

Comment No. 111: Cumulative Impacts Summary Table

See response to Comment No. 87.

Comment No. 112: Mitigation Measures Summary Table

See response to Comment No. 87.

Comment No. 113: Climatic Description

The USAF agrees that there is a substantial climatic difference between the coastal areas of south and north Santa Barbara County. However, this is not pertinent to the evaluation of potential air contaminant impacts from the SLC-7 project.

Comment No. 114: High Ozone Value Occurrences

The reference mentioned in this comment was incorrectly cited in the Draft EIS. The correct document is Draft EIR/EIS, Proposed ARCO Coal Oil Point Project (Chambers 1986). Revisions to page 3-67 and Section 8.0 of the Draft EIS are included in Section 3.0 of the Final EIS.

Comment No. 115: Area Pollutant Sources

Amended text for page 3-71 that discusses sources of air pollutants is included in Section 3.0 of the Final EIS.

Comment No. 116: Attainment of State Air Quality Standards

Amended text for page 3-71 that discusses attainment of state air quality standards is included in Section 3.0 of the Final EIS.

Comment No. 117: Northern and Southern Santa Barbara County Attainment Status

As stated in the last paragraph on page 3-71 of the Draft EIS, southern Santa Barbara County is in nonattainment for ozone, and exceedances of the national ambient air quality standards for ozone have been recently recorded in northern Santa Barbara County.

Comment No. 118: Northern Santa Barbara County Exceedance of National Ambient Air Quality Standard for Ozone

As stated in the last paragraph on page 3-71 of the Draft EIS, exceedances of the national ambient air quality standards for ozone have been recently recorded in northern Santa Barbara County.

Comment No. 119: Consideration of State Nonattainment Designations

See response to Comment 116.

Comment No. 120: Data Used in Table 3.5.1 (Measured Air Quality Data Summary)

The purpose of the information presented in Table 3.5.1 and the related discussion is to illustrate that North Santa Barbara County is not in attainment of the California Ambient Air Quality Standards for ozone and PM₁₀ and the National Ambient Air Quality Standard for ozone. As a result, air quality analyses presented in the Draft EIS were performed on the basis that ozone, PM₁₀, and their precursors are nonattainment pollutants. Inclusion of additional air quality monitoring data into Table 3.5.1 would not alter the assumptions upon which air quality analyses for SLC-7 were performed.

Comment No. 121: Wind Speeds

Amended text for page 3-76 that discusses changes in wind speeds is included in Section 3.0 of the Final EIS.

Comment No. 122: Explanation of Emergency Response Agency Notification and Coordination

As described in Section 3.11.1, Regional Environment (pp. 3-125 and 3-126), the emergency response protocol is set out in the Hazardous Materials Emergency Response Area Plan (see response to Comment No. 19). The plan is briefly summarized on page 3-126, including participating agencies and the responsibility of the Santa Barbara County Hazardous Materials Coordinator to coordinate emergency response activities.

Comment No. 123: Definition of Toxic Hazard Corridors

The limits applied to protect the public should an emergency situation occur are short-term public emergency guidance levels (SPEGL) as established by the National Research Council in 1989. The SPEGLs, in parts per million, are as follows:

<u>Duration</u>	<u>Hydrazine</u>	<u>UDMH</u>	<u>NO₂^(a)</u>
30 min	NL	NL	2
1 hour	2	24	1
2 hours	1	48	0.5
24 hours	0.08	1	NL

NL = No Limit Defined by National Research Council.

^(a) N₂O₄ limits are the same as for NO₂ since there is rapid dissociation from N₂O₄ to NO₂.

Comment No. 124: Hypergolic Transportation Safety

Section 3.11.2, Local Environment, is part of the description of existing environment. As such, it is appropriate to include a discussion of existing transportation of hypergolic materials (i.e., shipments for operations at SLC-4 East and West), but inappropriate to include the potential shipments that would result from the proposed action. Information about projected hypergolic propellant shipment requirements to support activities at SLC-7 is included in Section 4.11.1, Regional Impacts.

Comment No. 125: Range Safety Procedures

The flow of emergency information between USAF and other government agencies is defined in the Hazardous Materials Emergency Response Area Plan (see response to Comment No. 109) and in a mutual aid agreement between USAF and the City of Lompoc (Section 3.11.1, Regional Environment).

Comment No. 126: Nitrogen Dioxide Impact Value

See response to Comment No. 36.

Comment No. 127: Significance of Impacts

See response to Comment No. 36.

Comment No. 128: Draft EIS Adequacy in Addressing Santa Barbara County Air Pollution Control District Scoping Comment 1.C (Emission Impacts Should be Modeled)

See response to Comment No. 36.

Comment No. 129: Draft EIS Adequacy in Addressing Santa Barbara County Air Pollution Control District Scoping Comment 2 (Emission Offsets Should Be Clearly Identified)

See response to Comment No. 100.

Comment No. 130: Draft EIS Adequacy in Addressing Santa Barbara County Air Pollution Control District Scoping Comment 3 (An Air Quality Analysis for the Proposed Project Should Be Done)

See response to Comment No. 36.

Comment No. 131: Draft EIS Adequacy in Addressing Santa Barbara County Air Pollution Control District Scoping Comment 5 (Cumulative Impacts Should Address Expected Number of Launches per Year at VAFB, Characterizing Both the Launch Location and Type of Space Launch Vehicle)

The SBCAPCD new source review guidelines require that operational NO_x and ROC emissions from SLC-7 must be offset at a ratio of 1.2 to 1, such that a net benefit to air quality results. Therefore, it is not anticipated that operational NO_x and ROC emissions from SLC-7 will contribute to existing ozone standard exceedances.

Comment No. 132: Draft EIS Adequacy in Addressing Santa Barbara County Air Pollution Control District Scoping Comment 6 (Offsite Impacts, Such as Those From Transporting Fuel for the Titan Centaur to VAFB, Should be Addressed)

Section 4.0, Environmental Consequences and Mitigation Measures, addresses impacts to areas outside of VAFB, including the locations and magnitudes of impacts. Some of the impacts to areas outside of VAFB addressed in the Draft EIS include:

- Section 4.2, Water Resources, discusses regional impacts to water resources (the Lompoc Plain and Lompoc Upland ground water basins) that are clearly outside of VAFB.
- Section 4.4, Wildlife, discusses potential impacts to wildlife in a region that includes areas outside of VAFB such as the Channel Islands.
- Section 4.5, Air Quality and Meteorology, analyzes impacts to air quality on a county-wide basis and impacts to stratospheric ozone on a world-wide basis.
- Noise impacts (Section 4.7, Noise) are analyzed for areas outside of VAFB such as Lompoc and Santa Maria.
- Transportation impacts (Section 4.10, Transportation) are discussed for highways in the region and the City of Lompoc.
- Off base hypergolic propellant transportation is discussed, in a probabilistic fashion, in Section 4.11, Health and Safety.
- Socioeconomic impacts to local communities are discussed in Section 4.12, Socioeconomics.

Comment No. 133: Draft EIS Adequacy in Addressing Santa Barbara County Air Pollution Control District Scoping Comment 7 (The Need for SLC-7 in Light of Potential Congressional Action to Put VAFB's Existing Launch Facilities in "Caretaker" Status Should be Discussed)

The need for the proposed action is discussed in Section 1.3, Purpose and Need for the Proposed Action. In addition, SLC-6 (the only launch facility currently in caretaker status) is analyzed throughout the Draft EIS as an alternative site to the proposed Cypress Ridge site. SLCs 3, 4, and 5 are also considered as alternatives to the proposed site, with issues such as current and planned status discussed.



LETTER 10

Santa Barbara County Park Department

610 Mission Canyon Rd., Santa Barbara, Ca. 93105 (805) 568-2461

"At Rocky Nook Park"

MICHAEL H. PAHOS
Director of Parks

September 6, 1989

FRANK LAURAN
Deputy
Director of Parks

HQ Space Systems Division
P.O. Box 92960
Worldway Postal Center
Los Angeles, CA 90009-2960

Attn: Mr. John Edwards

Re: Draft EIS for the Construction and Operation of the Space Launch
Complex 7 at Vandenberg Air Force Base, California

Dear Mr. Edwards,

The Santa Barbara County Park Department has the following comments
to the above referenced document:

Page 2-9:

[134] The document lists several sizes and weights of expended and
jettisoned material that falls into the ocean and not recovered. The
document does not address the potential "scatter pattern" of the
debris, the possibility of greater danger to the public and
surrounding vicinity or the length of evacuation necessary during
this type of emergency.

Page 2-23:

[135] Facility Construction - The document does not address the impacts
from air quality, traffic, wildlife disturbance, recreation use,
noise and construction disturbance due to the proposed borrow pit
along Highway 246.

Page 2-71:

[136] Land Use - The document states that there would be a maximum of three
launches per year from SLC-7 and six per year from other space launch
complexes beginning in 1994. Does this mean that there will be nine
(9) additional launches in 1994? Nine new launches in addition to
those presently occurring every year is not an insignificant impact

to the parks and recreational systems within the area and should be addressed within the document.

The document does not address any vibration or sonic boom overpressure to existing aquifer(s), underground waterlines or above ground storage tanks within close proximity of the project (within 2 miles). The long term contamination and draft on the existing aquifer and the effects on other common users must be addressed.

Page 2-71:

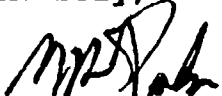
[137] Recreation - The document does not address the impact to the parks during delayed launches. Park personnel have reported delays of up to 7 days where, during this period, the park remained evacuated. There has been no willingness, on the part of VAFB in the past to consider the public need for recreation in the scheduling of launches. From a park operational standpoint, the document does not address the impacts of any launch schedule occurring during peak season use or the impact to public recreation during this peak season due to the dependency of public use.

The criteria for developing launch schedules or launch windows must include the impacts to public recreational use. There is a lack of sensitivity to the recreation needs that the Santa Barbara County Park Department serves. The launch program needs to incorporate the demand of dependable public recreational use.

[138] It is absurd to list 'no mitigation measures' to the impacts on recreational use. Those impacts listed in this correspondence need to be evaluated and addressed. The Santa Barbara County Park Department cannot justly represent itself and give adequate recreation availability to the public recreation users with a project and its mitigations or lack thereof as this document exists.

Your cooperation and attention to the concerns and comments of the Park Department is appreciated.

Sincerely,


Michael H. Pahos
Park Director

cc: Weldon Hobbs, Park Superintendent

Resource Management Department

RESPONSE TO LETTER 10

Received From: Santa Barbara County Park Department
Michael H. Pahos, Park Director

Comment No. 134: Debris Scatter

The weights referred to in Section 2.1.3.1 and Figure 2.1.6 are for fuel, and although the overall lengths of both the Titan IV/Centaur and Titan IV/NUS are given, as is the size of the payload faring, neither sizes nor weights were given for the individual expended SRMUs and stages, minus fuel.

For further information regarding potential debris scatter and risks to the public, see response to Comment No. 188. Delayed launches are discussed in response to Comment No. 124.

Comment No. 135: Impacts Due to Proposed Borrow Pit Along Highway 246

See response to Comment No. 44.

Comment No. 136: Increases in Number of Launches and Effects of Sonic Boom/Vibration on Aquifer(s), Underground Water Lines, and Aboveground Storage Tanks

The annual launch rates from 1986 projected through 1995 are represented in Table 4.13.1. As shown, six launches per year are projected for the years 1990 through 1994, and in 1995 the three Titan IV at SLC-7 will be added to total the nine referred to on page 2-71.

The sonic boom focal range is shown in Figure 4.4.1 and discussed in Section 4.4.1.1. The area of greatest potential effect would be San Miguel Island, where there are no aboveground storage tanks. Aquifers and underground water lines would not be affected by sonic boom overpressures even if they were present.

There has not been and should not be contamination of the aquifer by the proposed project, as no fluids will be injected into the aquifer. As stated in Section 3.2.2.1, on page 3-22, the Lompoc Terrace ground water basin has a total storage capacity of about 60,000 acre-feet. Approximately one-third of that storage is above mean sea level. Contamination by sea water intrusion could occur only if water would be removed from storage below sea level

(USAF/SAC 1982). However, as noted in Section 4.2.2, the 45 acre-feet per year over current demand required by SLC-7 operations would put the ground water basin into overdraft. This impact would be significant.

Comment No. 137: Impacts to Parks During Delayed Launches

The scheduling of launches is dependent upon the narrow time frame of an available window for any specific launch and, therefore, cannot be arbitrarily arranged to occur at a time that might be more convenient from a recreational and park operational standpoint. Launch delays during these windows are due to either adverse atmospheric conditions, or mechanical problems that would need to be resolved before the launch could safely take place.

Comment No. 138: Mitigation Measures for Recreation

The mitigation measures suggested by the commenter have been addressed in responses to Comment Nos. 134-137.



LETTER 11

County of Santa Barbara

RESOURCE MANAGEMENT DEPARTMENT

John Patton, Director

September 7, 1989

Mr. John Edwards
 HQ Space Systems Division
 PO Box 92960
 Worldways Postal Center
 Los Angeles, CA 90009-2960

RE: Comments on the SLC 7 EIS

Dear Mr. Edwards:

Thank you for the opportunity to review the SLC 7 EIR. Our detailed comments are attached and include three major concerns that I would like to emphasize here.

[139] First, the alternative of upgrading the SLC 6 site to accommodate this project is clearly far superior environmentally to the other alternatives. The SLC 6 alternative would entirely avoid earthmoving activities and loss of native vegetation, reducing the risk of erosion, air quality impacts, and biological impacts. The SLC 6 alternative would also avoid significant visual impacts and would have smaller growth inducing effects. Minimization of water use and attendant impacts on the Lompoc Terrace groundwater basin would also result from the SLC 6 alternative. For all of these reasons, this department feels that the SLC 6 alternative should be chosen to implement the Titan IV/Centaur launch program.

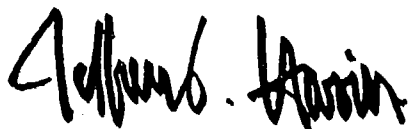
[140] Second, the growth inducing impacts of the SLC 7 project clearly have potentially significant environmental implications for Santa Barbara County. Increased demand for housing and public services would exacerbate existing regional and local groundwater overdraft, air quality problems, and traffic constraints. The increased demand for government services such as police and fire protection would pose a substantial burden on local governments which are already fiscally constrained. Furthermore, the increased need for housing would increase pressure to convert the County's prime agricultural land or significant biological communities to urban use. The significance of these issues should be strongly stated in the Final EIS.

[141] Thirdly, to decrease the extent to which the project would reduce stratospheric ozone, the use of chlorofluorocarbon (CFC) 22 as refrigerant instead of CFC 12 is strongly recommended. The potential for the project to result in a 0.01 percent depletion of stratospheric ozone and as many as an additional 25,000 carcinomas and 1,000 new melanomas worldwide must be acknowledged to be a highly significant impact.

Mr. John Edwards; SLC 7 EIS
September 7, 1989
Page 2

This department appreciates having had an opportunity to comment on this EIS.
Please feel free to contact Alice McCurdy at (805) 568-2006 if you have
questions about our concerns.

Sincerely,

A handwritten signature in black ink, appearing to read "Jeffrey T. Harris". The signature is stylized with a large initial "J" and a cursive "Harris".

Jeffrey T. Harris, Deputy Director
Division of Environmental Review & Compliance

JTH:AKM:jms:6674A

Attachment

cc: John Patton, RMD
Doug Anthony, RMD

Santa Barbara County Comments on SLC 7 EIS

- [142] p. S-4 The comment stating that the northern Channel Islands have "a poorly developed animal population" should be re-worded to acknowledge the extreme biological significance of these islands, especially for marine mammals and birds.
- [143] p. S-9 The generation of 119 tons of hazardous waste/year must be acknowledged as a cumulatively significant contribution to the state's hazardous waste load. It is unacceptable not to propose mitigation for waste management.
- [144] What is the basis for the finding of no significant impact regarding the effects of fuel transport and use on human health and safety? The County would consider safety impacts significant if the potential for a fatal accident exceeds one chance in a million per year.
- [145] p. S-10 As explained in comments that follow, this department does not concur with the EIS' conclusion that most environmental impacts would not be considered significant after implementation of mitigation measures. This finding is also inconsistent with the
- [146] section dealing with significant unavoidable adverse effects (p. 4-171: geo/soils, water use, veg., air quality, health and safety).
- [147] p. 2-57 The estimate of the project's contribution to groundwater overdraft should include the secondary water demand from induced growth.
- [148] p. 2-60 The document should state whether any egg losses are expected for the California least tern. If so, any such losses should be considered significant. Please provide a reference for the comment
- [149] that no mother-pup separation would be expected. It is incorrect to state that grey whales occur infrequently in the project area. To
- [150] avoid impacting this sensitive mammal, launches should be timed to avoid the peak migration season through the channel.
- [151] p. 2-63 A 0.01% depletion of stratospheric ozone should be identified as a highly significant project impact. The cumulative impacts worldwide of ozone depletion must be generically addressed; this is not
- [152] accomplished on p. 2-74.
- [153] p. 2-66 Implementing the project at the undeveloped sites would create a significant intrusion into expansive, highly scenic coastal views from the County's Jalama Park.
- [154] p. 2-70 Given the total world population, what would be the expected number of lethal and non lethal cancers attributable to the project?
i.e.; 2/10 mil x 5 bil. people = 1,000 new melanomas
5/mil x 5 bil. people = 25,000 new carcinomas (worst case)

- [155] p. 2-70 It seems likely that growth impacts would be experienced in the Santa Ynez Valley, especially the community of Buellton. The justification for stating that the project's growth effects would be largely beneficial is unclear.
- [156] p. 2-71 The potential health and safety effects to the proposed Bixby housing referred to here must be addressed, at least briefly.
- [157] p. 2-79 Mitigation for vegetation loss should include compensation through offsite habitat restoration and preservation of offsite habitat in perpetuity.
- [158] p. 3-58 The local form of Anniella pulchra is a regionally declining, sensitive species which has been classified as a "species of concern" by the California Department of Fish & Game.
- [159] p. 3-125 The status of the Hazardous Materials Response Plan should be updated.
- [160] p. 3-129 The document should note that one accident would be expected every 5+ years.
- [161] p. 3-139 Please provide a reference to the comment that VAFB activities have a minor economic impact on the Santa Ynez Valley.
- [162] p. 4-16 The increases in overdraft attributable to direct and indirect project water uses (380 AFY construction, 305 AFY operation) are not "small" and should be acknowledged to be substantial.
- [163] p. 4-24 The loss of 90 acres of central coastal scrub and Venturan coastal sage scrub would clearly be significant under County standards. It is meaningless to call the loss insignificant because it represents a loss of less than 1 percent of that community; would the authors judge the loss of 1.0% of Amazonian rainforest to be an insignificant loss?
- [164] p. 4-32 Similarly, the cumulative loss of central coastal scrub habitat should be identified as significant.
- [165] p. 4-32 Mitigation for the loss of up to 100 mature and at least as many seedlings of the candidate plant Monardella undulata var. frutescens should be insured by the project proponent, and not left up to the volunteer efforts of the botanical community. Also, mitigation for habitat loss should include compensation through offsite habitat restoration and preservation of comparable habitat offsite in perpetuity.
- [166] p. 4-39 The potential for any egg loss in the California least tern nesting colonies should be identified as a potentially significant and unavoidable impact.
- [167] p. 4-39 The potential for permanent hearing loss in sea otters and pinnipeds must be identified as a potentially significant, unavoidable project effect.

- [168] p. 4-40 Unless the SLC-7 launches are timed to avoid the 75 day breeding period on San Miguel Island, it appears that impacts to pinniped populations would be significant due to the potential for some mortality from pup abandonment, etc.
- [169] p. 4-48 Due to the rarity of the burrowing owl in Santa Barbara County, loss of habitat for this species from the Boathouse Flats alternative should be considered significant.
- [170] p. 4-51 The temporary loss of the Boathouse area as a roosting area for brown pelicans should be classified as significant but short-term due to the sensitivity of this species.
- [171] p. 4-53 Similarly, the Boathouse Flats alternative should be identified as causing a potentially significant disruption to pinnipeds' use of the shoreline immediately fronting the site.
- [172] p. 4-55 Mitigation should include prohibiting launches during the 75 day breeding period for pinnipeds on San Miguel Island.
- [173] p. 4-57 et seq. It is unclear what standards have been used to assess the significance of the projects' air quality impacts. Use of the County's thresholds of significance are recommended. The County's threshold for long term emissions is 2.5 lbs/hr. for non-attainment pollutants and 5.0 lbs/hr. for attainment pollutants. The County's short term threshold is the generation of 2.5 tons of pollutants per three month period.
- [174] p. 4-69 The County strongly supports the use of CFC 22 instead of CFC 12 to reduce damage to stratospheric ozone.
- [175] p. 4-75 The 0.01 percent reduction in stratospheric ozone and the resultant increase in the incidence of cancer must be identified as a significant impact on air quality and public health. The potential for increased cancers worldwide must be noted. Due to the global nature of the health-related impacts, it is unreasonable to limit the impact assessment to the statistic of 5 cancers per 100 million persons.
- [176] p. 4-90 The analysis of cumulative effects should include a discussion of the status and problems encountered at the Class I hazardous waste site at Casmalia.
- [177] p. 4-102 et seq. The visual impacts of the Cypress Ridge, Boathouse Flats, and Vina Terrace alternatives should be identified as significant and unavoidable due to the project's intrusion into expansive, highly scenic coastal views from the south.
- [178] p. 4-110 This appears to be the first reference to the Manzanita Road borrow site. Any other environmental effects (erosion, loss of vegetation, impacts to wildlife, aesthetics, etc.) associated with use of this borrow site must be analyzed.

- [179] p. 4-127 The last sentence on this page is not meaningful.
- [180] p. 4-133,
-4 The document should state clearly that statistically, a hypergolic propellant accident would be expected every 2 years (1.56 accidents/3 years = 1 accident/2 years).
- [181] p. 4-134 The number here for the excess cancer rate for melanomas differs from the estimate on p. 2-70; the numbers should be reconciled.
- [182] p. 4-134 The risk assessment must be described here in enough detail to indicate the likelihood of hazards occurring and the severity of hazards when they do occur. Project effects should be identified as significant since the project has the potential to increase the incidence of cancer; other safety hazards posed by the project may also be significant.
- [183] p. 4-140
et seq. The County conducted a study of the regional impacts of growth and found that, for every new direct job, 1.182 indirect jobs are created (REGIS, 1980). This higher multiplier should be used to analyze population growth and impacts. Using the 1.182 figure, 473 indirect jobs would result from project operations.
- [184] p. 4-141 The housing impacts should be evaluated in terms of percent change in vacancy rates, rather than relative to the absolute number of vacant housing units.
- [185] p. 4-142 Construction phase and long term effects on public services would appear to be significant for more issues than increased overdraft alone; the need for additional firefighters and police should be expected to have a significant impact on fiscally-constrained local governments.
- [186] p. 4-153 The potential for the SLC-7 operations work force to increase pressures to rezone non-urban land in the Lompoc Valley must be identified as a significant environmental impact; the bulk of Lompoc Valley's non-urban land is either prime agricultural land or biologically significant native habitat (most notably Burton Mesa chaparral).
- [187] p. 4-165 As described in the preceeding comments, we do not concur either that short term effects can be mitigated to a level of insignificance or that there are few significant long term effects.
- [188] p. 4-166 Given the limited recharge potential of the Lompoc Terrace groundwater basin (250 AFY, p. 3-22), an overdraft of 45 AFY should be identified as environmentally significant.
- [189] p. 4-166
et seq. Again, the potential for project-induced growth must be considered potentially significant environmentally due to the likely pressure to convert prime farmland and/or biologically sensitive habitat to urban use.

p. 4-171 The preceding comment regarding p. 4-165 also applies here.

[190] p. 4-172 The 0.01 percent depletion of stratospheric ozone must be identified as highly significant due to the potential for large numbers of additional cases of cancer worldwide.

[191] p. 4-173 As stated in our previous comments, impacts to wildlife would appear to include significant, unavoidable impacts.

AKM:jms:6674A

RESPONSE TO LETTER 11

**Received From: County of Santa Barbara, Resource Management Department
Jeffrey T. Harris, Deputy Director**

Comment No. 139: Selection of SLC-6

The Draft EIS (Summary) concludes that there would be fewer environmental impacts associated with the reconfiguration of SLC-6 than with development of either the proposed Cypress Ridge site or the Boathouse Flats or Vina Terrace alternatives. NEPA does not require the selection of the environmentally preferred alternative, but rather consideration of environmental values on the decision-making process. The decision to proceed with the project and the selection of the location for SLC-7 development will be documented in the Record of Decision (ROD), expected in early 1990.

Comment No. 140: Growth-inducing Impacts

Potential growth inducing impacts associated with SLC-7 are addressed in the Draft EIS for Water Resources (Section 4.2), Air Quality and Meteorology (Section 4.5), Waste Management (4.6), Transportation (Section 4.10), Socioeconomics (Section 4.12), Land Use Impacts and Relationship to Plans (Section 4.13), and Recreation (Section 4.14). The criteria for evaluation of the potential significance of impacts are described in each of those sections. Where these criteria levels are exceeded, the impact is denoted as significant (as with water resources). See responses to Comment Nos. 142, 171, and 172 for discussion of fiscal and land use issues.

Comment No. 141: Significance of Stratospheric Ozone Depletion

The Draft EIS (Section 4.5.4, Stratospheric Ozone) states that the air conditioning systems for the proposed project must utilize environmentally preferred chlorofluorocarbons (CFC) as refrigerants, where feasible. In addition, it is noted that USAF is recommending the use of CFC-22 as a replacement for CFC-12 since it is environmentally preferable. The Draft EIS notes (Section 4.5.4.4) that the risk level of additional melanomas is calculated to be 5 per 100 million persons, a level that is considerably below the commonly acceptable level of one excess cancer per one million persons used for environmental risk analyses and is therefore not considered significant.

Comment No. 142: Description of Channel Islands Animal Population

The northern Channel Islands are important sites for populations of marine mammals and birds as discussed in Section 3.4.1.4, Channel Islands Wildlife. The summary is written to indicate that the land mammal fauna of the northern Channel Islands is depauperate, with only 16 native and 19 introduced species recorded. The language contained in the Draft EIS does not imply that the northern Channel Islands wildlife is not of ecological or scientific interest.

Comment No. 143: Significance of Hazardous Waste Impacts

The expected 119 tons of hazardous waste that SLC-7 would generate in one year is less than 0.02 percent of the hazardous waste disposed of in California in 1987, and as such will contribute a very small share to hazardous waste disposal and is not considered cumulatively significant. This waste will be disposed of in a manner that is consistent with federal, state, and local laws and regulations. A discussion of mitigation measures is contained in response to Comment No. 33.

Comment No. 144: Significance of Impacts to Human Health and Safety from Hypergolic Fuel Transport

The basis for the finding of no significant impact to human health and safety from fuel transport is contained in Section 4.11.1.2, Normal Operations. The expression of the hypergolic fuels transportation accident rate as a function of time and mileage is correct as shown in the Draft EIS. An additional method of presenting this information is in terms of the accident risk per year. At the hypergolic propellant shipment rate needed for proposed operations (i.e., SLC-7 only), an accident may occur every 4.5 years since it would take more than seven years to travel one million round-trip vehicle miles and the historic accident rate is about 1.56 accidents per one million round-trip vehicle miles between the points of manufacture (Mississippi and Alabama) and VAFB. The current risks for existing VAFB programs is approximately one accident every 3.2 years. The additional risk from SLC-7 would be approximately one accident every 2.3 years. In addition to this low accident rate, the vehicles are specially designed to resist rupture or spill, thereby further reducing the potential for adverse consequences. Risks for hypergolic fuel transportation are not calculated in the potential for fatalities, but rather in the potential for an accident to occur. There have not been any fatalities associated with USAF transport of hypergolic fuel.

Comment No. 145: Findings of Significance and Consistency of Findings in Summary and Draft EIS Section 4.17 (Unavoidable Adverse Impacts)

Findings of significance are addressed in responses to comment Nos. 141, 151, 153, 163, 164, 165, 166, 167, 168, 169, 170, 173, 175, 185 and 187.

Comment No. 146: Consistency of Summary and Section 4.17.1, Significant Unavoidable Adverse Effects

The conclusions of the Summary note that most environmental impacts would not be considered significant after mitigation measures are implemented. This is consistent with Section 4.17, where significant unavoidable adverse effects include only geology and soils (the potential impacts from a major regional earthquake), water use (ground water use), vegetation (locally, not regionally, significant impacts to *Monardella undulata* var. *frutescens*), air quality (impacts to stratospheric ozone), and health and safety (potential impacts from transport and handling accidents and health-related effects of ozone depletion). It should be noted that impacts to geology and soils and health and safety (transport and handling) are low probability events. In comparison to this limited number of concerns, impacts to vegetation (regional), wildlife, waste management, cultural resources, transportation, land use, and recreation were not considered to be significant unavoidable adverse effects.

Comment No. 147: Induced Growth Demand for Ground Water

As described in the Draft EIS (Section 4.2.1, Regional Impacts), estimates do include worst-case growth induced demands for ground water during the construction and operations phase to be 290 and 305 acre feet per year, respectively.

Comment No. 148: California Least Tern Egg Losses

The analyses completed for the Draft EIS determined that no egg losses would occur based on the following information. As shown in Figure 4.4.1, Titan IV/Centaur Sonic Boom Footprint, the intense portion of the sonic boom would be a considerable distance from least tern nesting sites. Schreiber and Schreiber (1980) analyzed the effects of impulse noise (such as sonic booms) on seabirds of the Channel Islands (area directly under the focus sonic boom area). Their analysis focused on Brandt's cormorants, western gulls, and Cassin's auklets since these species represent common birds that nest on cliffs, on the ground, and in burrows,

respectively. For the purposes of this analysis, the least tern is most like the western gull since they both nest on the ground. Schreiber and Schreiber concluded that there was no potential sonic boom risk to the western gull for overheating, chilling, kicking eggs, predation, or nest collapse. It would be expected that these results are applicable to the least tern. In addition, effects to least tern nesting activities from minuteman missile launches were analyzed by HDR Sciences (1981) which noted that activity during the launch period was within the expected range of normal behavior and that the launch had no adverse effects on reproductive behavior.

Jehl and Cooper (1980) performed experiments on domestic chickens and their eggs to determine the potential impacts from sonic booms. Their experiments did not reveal significant effects of simulated sonic booms on ovulation, oviposition, hatchability, or viability of chicks. In addition, there was no noticeable effect on the hatchability of thin-shelled eggs.

Evans et al. (1979) also investigated sonic boom effects on bird eggs. They note that sound pressure levels sufficient to break eggs are approximately one level of magnitude greater than that expected to accompany a Space Shuttle launch. In addition, they found no reason to believe that thin-shelled eggs would be damaged by sonic booms.

Based on these analyses, and since the sonic booms associated with the Titan IV would not be as great as those produced by the Space Shuttle, least tern egg losses are not expected as a result of the proposed action.

Comment No. 149: Pinniped References Regarding Mother-Pup Separation

The requested references, which find low risk of mother-pup separation in pinnipeds, are found in Section 4.4.1.3, Marine Mammals, and are as follows:

Bowles, A.; Stewart, B. S. 1980. Disturbances to the pinnipeds and birds of San Miguel Island, 1979-80. In: Jehl, J. R.; Cooper, C. F., eds. Potential effects of Space Shuttle sonic booms on the biota and geology of the California Channel Islands: research reports. Prepared by the Center for Marine Studies, San Diego State University, in cooperation with Hubbs/Sea World Research Institute. Prepared for USAF, Headquarters, Space Division, El Segundo, California. Tech Rep 80-1. Section 4, pp. 99-137.

Stewart, B. S.; Antonelis, G. A., Jr.; DeLong, R. L.; Yochem, P. K. 1988. Abundance of harbor seals on San Miguel Island, California, 1927 through 1986. Bull. So. Calif. Acad. Sci. 87(1):39-43.

Comment No. 150: Gray Whales

Section 4.4.1.3, Marine Mammals, notes that Gray whales are known to pass within 100 miles of the VAFB shoreline during the annual winter-spring migration periods. It is not necessary to time launches to avoid these periods due to the limited potential for impact since noise would rapidly attenuate below the surface of the ocean and with distance from the source.

Comment No. 151: Significance of Stratospheric Ozone Depletion

The depletion of stratospheric ozone is identified as a potentially significant unavoidable adverse impact in Section 4.17.1.4, Air Quality.

Comment No. 152: Cumulative Impacts to Ozone

Section 3.5.3, Air Quality of the Stratosphere, discusses worldwide trends in impacts to stratospheric ozone depletion (Ozone Trends Panel 1988; EPA 1987, 1988, 1989). This section notes conclusions drawn from the Ozone Trends Panel and the Environmental Protection Agency documenting the extent of stratospheric ozone depletion. The impact analysis contained in Section 4.5.4, Stratospheric Ozone, utilizes the current level of depletion of stratospheric ozone as the baseline for calculating the 0.01 percent change in the rate of depletion and notes the potential results of this change.

Comment No. 153: Significance of Visual Impacts to Jalama Beach County Park

USAF recognizes the scenic quality and the user sensitivity of the Jalama Beach area. The criteria adopted for determination of significance of visual impacts is contained in Section 4.8, Visual Resources, and is as follows:

- A substantial, negative aesthetic effect for a large number of people.
- Initial introduction of human elements into a pristine area.
- Degrading the aesthetic value of an area with artificial illumination.

As indicated in Section 4.8.1, Regional Impacts, the construction of the proposed project at one of the undeveloped sites would not significantly alter the visual resource quality at Jalama Beach due to the distance from which the project would be viewed (approximately 8 miles). At this distance, the proposed project would not be dominant in the landscape and would not

obstruct public views of the coastline. Human elements now visible from Jalama Beach include offshore oil drilling platforms which are more dominant than SLC-7 would be if constructed at an undeveloped site.

Comment No. 154: Calculation of Potential Cancer Impacts

As noted in Section 4.5.4, Stratospheric Ozone, operation of the proposed project would result in a very small increase in the melanoma rate (not the fatality rate) from 10 per 100,000 persons to 10.005 per 100,000 persons which translates to a risk level of 5 per 100 million persons, which is considerably below the commonly accepted risk rate of one in one million. Based on a world population of approximately 5.128 billion (Houghton Mifflin 1989), approximately 1,000 additional melanomas would be expected world wide as a result of the proposed action.

Comment No. 155: Distribution of Growth Induced Impacts

Growth impacts in the Santa Ynez Valley, including Buellton, are addressed in detail in Section 4.12, Socioeconomics, where it is noted that the expected increase in population due to project operations is expected to be approximately 55 persons in 1995. The beneficial and adverse impacts to socioeconomic resources are addressed in Section 4.12, which addresses additional requirements for public services and increased economic benefits in the region. The proposed SLC-7 project would provide long-term employment for skilled and professional personnel. The average wages associated with these jobs (\$27,650 for off-base military personnel and \$45,220 for civilians) place them in the upper 34 percent of annual 1984 household income for Santa Barbara County (USDC 1985). It is anticipated that this high wage rate and accompanying tax revenues would have a positive overall impact on the provision of public services.

Comment No. 156: Summary of Potential Impacts to Human Health and Safety at the Proposed Bixby Ranch Development

There is currently no proposal for development of housing at the Bixby Ranch. The potential health and safety impacts to areas outside of VAFB, including the Bixby Ranch, are discussed in Section 4.11, which provides a summary of the Risk Assessment undertaken for the proposed action (Environmental Solutions, Inc. 1989). The conclusions summarized from the Risk Assessment note that present safety measures are sufficient to mitigate the potential risks to public health and safety from implementation of the proposed action.

Comment No. 157: Mitigation Measures for Vegetation Impacts

The proposed mitigation measures for vegetation impacts are described in Section 4.3.4, Mitigation Measures. Proposed measures are extensive in nature due to the habitat value of the area and include:

- Specimen recovery by interested scientific parties.
- Construction pre-planning to avoid sensitive areas.
- Staking of sensitive areas for avoidance during construction and minimizing overall habitat loss.
- Biological monitoring during and after construction.
- Topsoil stockpiling.
- Revegetation with endemic plants.
- Soil stabilization measures.
- Erosion control and restoration plan.
- Acidic deposition monitoring.
- Exotic plant invasion control.

Additional mitigation measures, including potential compensation for lost habitat, may be developed in consultation with federal and state agencies as described in response to Comment Nos. 41 and 43.

Comment No. 158: Status of *Anniella pulchra*

The local form of the California legless lizard (*Anniella pulchra*) has been classified as a species of concern by the California Department of Fish and Game. The amended text that addresses this change in status is contained in Section 3.0 of this Final EIS.

Comment No. 159: Status of Hazardous Materials Response Plan

The Hazardous Materials Emergency Response Area Plan was published in June 1988 by the Santa Barbara County Office of Emergency Management. This document is currently undergoing revision for planned publication in early 1990 (Personal communication with SBCOEM 1989).

Comment No. 160: Hypergolic Propellant Transport Accident Rate

See response to Comment No. 145 for information on hypergolic propellant transport accident rate.

Comment No. 161: Existing Vandenberg Air Force Base Economic Influence on Santa Ynez Valley

The most comprehensive description of the relationship between VAFB and surrounding communities available at the time of analysis was contained in:

USAF 1987. Economic resource impact statement for Vandenberg Air Force Base, fiscal year 1987, prepared by Cost Branch, Comptroller Division, 4392nd Aerospace Support Wing, Vandenberg Air Force Base, California.

An update to this document for 1988 is available from USAF (4392nd Aerospace Wing, Comptroller Division, Vandenberg Air Force Base). Additional information regarding place of residence for VAFB workforce available from the 1980 Census of population, and the census journey to work statistics (U.S. Department of Commerce 1983b; U.S. Department of Commerce 1983c) shows that less than four percent of VAFB workforce lived in the Santa Ynez Census County Division (CCD).

Comment No. 162: Description of Increases in Ground Water Overdraft

Section 4.2.1, Regional Impacts, notes that the potential increases in groundwater overdraft attributable to project construction and operations are 290 and 305 acre-feet per year, respectively. These increases represent approximately 0.2 percent additional demand on groundwater resources, a comparatively small amount. In addition, Section 4.2.1 notes that, while small, these increases in demand are significant due to existing overdraft. Mitigation measures are described in Section 4.2.4, Mitigation Measures, and discussed in response to Comment No. 83.

Comment No. 163: Significance of Impacts to Venturan Coastal Sage Scrub

The criteria developed by Santa Barbara County for significance of impacts to vegetation such as Venturan coastal sage scrub is broadly defined as follows (Department of Resource Management):

Disturbance to, or loss of a known resource via one of the following:

- Grading and/or construction activities
- Vegetation removal
- Human and/or domestic animal encroachment
- Chemical pollution
- Noise pollution
- Landscaping with non-native invading plant species

Under Santa Barbara County criteria, any disturbance or removal (by the methods noted above) of Venturan coastal sage scrub would be determined to be significant. Applying these criteria to the impacts at the proposed or alternative sites would result in a determination of significance by Santa Barbara County. The analysis contained in the Draft EIS utilized a different set of criteria and is consistent with these criteria in determining that these impacts would not be significant since they represent less than one percent of the combined communities of central coastal scrub and Venturan coastal sage scrub.

Comment No. 164: Significance of Impacts to Central Coastal Scrub

As noted in response to Comment No. 150, any disturbance or removal of Central coastal scrub would be determined by Santa Barbara County to be significant. Applying these criteria to the impacts at the proposed or alternative sites would result in a determination of significance by Santa Barbara County. The analysis contained in the Draft EIS determined that these impacts would not be significant since they represent less than one percent of the combined communities of central coastal scrub and Venturan coastal sage scrub.

Comment No. 165: Mitigation Measures for *Monardella undulata* var. *frutescens*

Mitigation measures proposed for the loss of endemic vegetation are contained in Section 4.3.4 (Mitigation Measures), and are addressed in response to Comment No. 157.

Comment No. 166: Significance of Potential California Least Tern Egg Losses

As stated in response to Comment No. 148, least tern egg losses are not expected as a result of the proposed action.

Comment No. 167: Significance of Potential Hearing Loss to Sea Otters and Pinnipeds

The potential for hearing loss in sea otters and pinnipeds is addressed in Section 4.4.1.3, Marine Mammals. Section 4.4.1.3 notes that best available information indicates that permanent hearing loss is not likely and that expectations are that, in the event there are impacts to hearing, they would be short-term (Chappell 1980). In addition, mitigation measures have been proposed, in consultation with the U.S. Fish and Wildlife Service and National Marine Fisheries Service, that would ensure the protection of the resource (Section 4.4.5, Mitigation Measures). The Draft EIS documents that this short-term impact would not affect species viability and would therefore not be significant.

Comment No. 168: Significance of Potential Launch Impacts to Pinnipeds on San Miguel

The potential for mortality to pinniped pups is discussed in Section 4.4.1.3, Marine Mammals. Best available scientific information points to the limited probability of mother-pup separation due to launch-related noise for pinnipeds located on San Miguel Island (Stewart et al. 1988). A launch monitoring program has been proposed, in consultation with the U.S. Fish and Wildlife Service and National Marine Fisheries Service, that would document potential impacts to the resource (Section 4.4.5, Mitigation Measures) and modify mitigation measures accordingly.

Comment No. 169: Significance of Potential Impacts to Burrowing Owl Habitat at Boathouse Flats Alternative Site

Although the burrowing owl has been observed near the Boathouse Flat site, Section 4.4.2.3 notes that due to the present degraded condition of the grassland habitat at this site, and the widespread occurrence of this habitat and its associated species elsewhere in the VAFB region, the loss of this habitat is not expected to significantly affect the viability of the species. Section 3.3.1, Regional Environment, notes that grassland acreage on VAFB totals

approximately 18,650 acres. Table 3.3.1 notes that the Boathouse Flats site is made up of 130 acres of non-native grassland, which is approximately 0.7 percent of this type of non-native grassland on VAFB.

Comment No. 170: Significance of Potential Impacts to Brown Pelicans from the Boathouse Flats Alternative Site

The criteria for significance of impacts to wildlife are contained in Section 4.4, Wildlife.

Section 4.4 notes that impacts to wildlife would be significant if they:

- Substantially diminish habitat for a terrestrial or marine species.
- Substantially affect a rare or endangered species of animal or its habitat.
- Interfere substantially with the movement of resident or migratory wildlife species.
- Interfere substantially with reproductive behavior.

Section 4.4.3.1, Marine Birds, notes that a temporary dispersal of California Brown Pelicans could occur as a result of construction activities. This dispersal is expected to be short-term, with the birds seeking alternate roost sites on offshore rocks in the Point Pedernales and Rocky Point areas or on the sandy beach near the mouth of the Santa Ynez River. This impact is insignificant against the criteria stated above, since it would be short-term and since other roost sites are available nearby.

Comment No. 171: Significance of Potential Impacts to Pinnipeds from the Boathouse Flats Alternative Site

A significant impact would occur if harbor seals were to permanently abandon areas near the Boathouse Flats site. However, as indicated in Section 4.4.3.2, Marine Mammals, there is no clear evidence that this abandonment would occur. Additional information regarding abandonment would be developed through the land monitoring program as described in response to Comment No. 15.

Comment No. 172: Mitigation Measures for Pinniped Breeding Season

Section 4.4.1.3, Marine Mammals, discusses potential impacts to pinnipeds on San Miguel Island from launch activities. It is shown that, on the basis of a maximum of one launch during the breeding season, and normal breeding behavior (Stewart et al. 1988), the risks of and consequences from mother-pup separation are small. In light of this finding, it is not

necessary to restrict launches during this period. In addition, potential impacts to pinnipeds from SLC-7 launches during breeding season would be minimized through the proposed monitoring program.

Comment No. 173: Significance of Air Quality Impacts

The criteria that were established to determine significance of potential air quality impacts are contained in Section 4.5, Air Quality and Meteorology. An impact is considered significant if it causes:

- Violation of an ambient air quality standard.
- Contribution to an existing or projected air quality violation.
- Exposure of sensitive receptors to substantial pollutant concentrations.

As noted in the text of Section 4.5, these criteria were not violated.

Using Santa Barbara County standards for significance of 2.5 pounds per hour for non-attainment pollutants and 5.0 pounds per hour for attainment pollutants, SLC-7 emissions would also be considered insignificant since threshold limits would not be violated. Calculated values (from Table 4.5.2, p. 4-59) are as follows:

<u>Criteria Pollutant</u>	<u>Emission Level (Pounds per Hour)</u>
Nitrogen Oxides	1.16
Sulphur Dioxide	0.004
Carbon Monoxide	0.17
PM ₁₀	0.02
Reactive Organic Compounds	0.05

Comment No. 174: Use of CFC 22

Your comment is noted.

Comment No. 175: Significance of Stratospheric Ozone Impacts

The incremental cancer risk falls below the commonly acceptable level of one excess cancer per one million persons used for environmental risk analysis. The potential for increased cancers is noted in Section 4.5.4.4, Environmental Consequences of Stratospheric Effects, where potential effects are calculated on a world-wide basis. The expression of the incremental cancer

risk that may occur as a result of the proposed action as 5 per 100 million persons is a commonly accepted method of describing risk. It is appropriate in this utilization as it communicates the magnitude of the risk in an easily understandable form. See response to Comment No. 141.

Comment No. 176: Discussion of Casmalia Waste Disposal Facility in Cumulative Impacts

Including a discussion of the status and problems encountered at the Casmalia Class I hazardous waste disposal site would not be applicable to the SLC-7 project. There are no plans to utilize this facility as a disposal site for potential SLC-7 wastes.

Comment No. 177: Significance of Visual Impacts

See response to Comment No. 153.

Comment No. 178: Analysis of Potential Manzanita Road Borrow Site

The potential Manzanita Road Borrow Site is discussed to the degree necessary throughout the document in relation to the expected impacts at that location. Due to its limited size and its location on the interior of VAFB, it is not prominent in the discussions contained in Chapter 4, Environmental Consequences and Mitigation Measures. The site was included in surveys for cultural resources, vegetation, and wildlife. It is highlighted in the discussion of potential impacts to cultural resources since the cultural resources inventory determined that potentially important resources have been recorded there. The pages and sections where the Manzanita Road Borrow Site is discussed or referred to are:

<u>Page</u>	<u>Section Title</u>
2-23	Project Construction Activities
2-25	Project Construction Activities
2-57	Geology and Soils
2-68	Cultural Resources
3-33	Local Environment
3-49	Wildlife
3-112	Prehistoric Resources
4-110	Cypress Ridge
4-111	SLC-6
4-113	Boathouse Flats
4-114	Vina Terrace
4-119	Vina Terrace

Comment No. 179: Meaning of Last Sentence on Page 4-127

The sentence, "Health and safety impacts related to construction of the proposed action are not anticipated to present a higher risk potential than what would be expected for similar types of projects." was included in the regional impacts discussion of health and safety (Section 4.11, Health and Safety) to impart to the reader that construction of the proposed action does not present unusual risks to the public, and that impacts to health and safety are similar to those encountered in other large construction projects. Additional consideration is considered outside of the scope of this document since these issues are under the jurisdiction of USAF health and safety regulations.

Comment No. 180: Expression of Hypergolic Fuels Transportation Accident Rate

See response to Comment No. 144 for information on hypergolic transportation accident rate.

Comment No. 181: Potential Excess Cancer Rate

The excess cancer rate shown for melanomas on p. 2-70 is in error. The correct rate is 5 per 100 million persons, as shown on pp. 4-75 and 4-134. The corrected text is shown in Section 3.0 of this Final EIS.

Comment No. 182: Summary of Risk Assessment

The Risk Assessment (Environmental Solutions, Inc. 1989) is a technical document and is summarized in the Draft EIS in Section 4.11 (Health and Safety) in easily understood language, consistent with the President's Council on Environmental Quality Regulations (40 CFR Part 1500.8 *et seq.*) and at the depth of detail as appropriate for the significance of the impacts (40 CFR, Part 1502.2(b)). If more information is necessary, the Risk Assessment is available from:

Mr. John Edwards
HQ SSD/DEV
P.O. Box 92960
Los Angeles, California 90009-2960
Phone: (213) 643-0934

Comment No. 183: Regional Employment Multiplier

The Draft EIS calculates indirect employment for construction and operations in the following fashion:

	<u>Direct Employment</u>	<u>Employment Multiplier</u>	<u>Indirect Employment</u>	<u>Total Employment</u>
Construction	370	0.41	150	520
Operations	400	0.41	165	565

The source of the employment multiplier used is the Fiscal Year 1987 Vandenberg AFB Economic Resource Impact Statement (USAF 1987). The multiplier is based on empirical observation of employment at VAFB and the calculation of secondary jobs created (SJC) within the economic impact region (EIR). In fiscal year 1987, base appropriated funds employment was 10,466, including military (3,936), civilian (1,479), contract civilian (4,992), and other civilian (50). The SJC total of 4,309 was calculated as follows (USAF 1987):

$$SJC = \frac{RPAY \times (M-1)}{PRS} + \frac{RCONS \times M}{PRS} + \frac{RMAT \times M}{PW}$$

Where:

- M = GROSS INCOME MULTIPLIER (2.7759)
- PRS = TRADE SERVICE SECTOR SALES PER WORKER (\$73,160)
- PW = WHOLESALE SECTOR SALES PER WORKER (\$112,980)
- RCONS = ESTIMATED LABOR AND SERVICES EXPENDITURES OFF-BASE IN EIR (\$12,776,442)
- RMAT = ESTIMATED MATERIALS AND EQUIPMENT EXPENDITURES OFF-BASE IN EIR (\$15,333,444)
- RPAY = ESTIMATED PAYROLL EXPENDITURES OFF-BASE IN EIR (\$154,247,881)

These empirical calculations result in a relationship between base employment and employment created within the region of 4,309/10,446 (SJC/Base Employment), resulting in an employment multiplier of 0.41. The Santa Barbara County multiplier would be expected to be different since it applies to the entire county.

Comment No. 184: Evaluation of Housing Impacts

Utilizing the data referenced in the Draft EIS, the evaluation of housing impacts in terms of percent change in vacancy rates is as follows. In January of 1988, the combined Lompoc and

Santa Maria statistics (expected locations for the majority of the in-migrants) showed a total of 31,705 housing units, 30,312 occupied housing units, and 1,393 vacant housing units (California Department of Finance 1988). The vacancy rate associated with this aggregate is 4.4 percent. The proposed action would create the demand for approximately 305 housing units for peak construction demands and 315 housing units for operations. Subtracting these estimates from the total vacant units results in a projected vacancy rate of approximately 3.4 percent for both construction and operations. This value is higher than the minimum vacancy rate standard of two percent developed by U.S. Department of Housing and Urban Development which allows residents of housing market areas adequate rental choices (HDR Sciences 1981).

Comment No. 185: Significance of Impacts to Community Services

The criteria utilized for determination of significance of impacts to socioeconomic resources is contained in Section 4.12, Socioeconomics. The criteria are:

- Substantial growth or concentration of population.
- Displacement of a large number of people.
- The need for substantial new housing.
- The need for additional utilities distribution facilities.
- Shortages in public supply of water, energy, and/or services.

As described in Section 4.12.1.1, Cypress Ridge, socioeconomic impacts are expected to be relatively small. Population growth is expected to be one percent or less for impacted areas compared to projected 1995 populations. This potential growth is dispersed throughout local communities and is much less than historical growth rates, where from 1980 to 1986 Lompoc, Santa Maria, and Solvang experienced average annual growth rates of approximately 3.1 percent, 4.9 percent, and 4.3 percent, respectively. Demand for housing during construction is expected to be approximately 15 percent of existing vacant units in Lompoc and Santa Maria, which would decrease underutilization of this resource without large displacement of persons or the need for substantial new housing. Operations-related housing demand is likely to increase the need for single family housing units. The latitude to accommodate this type of demand is evident in land use plans where land is zoned for future single family residential growth (SBCCAPC, 1985; 1987). In addition, the City of Lompoc controls rezoning of land and may determine not to re-zone additional areas. If this were to occur, growth would shift to a different area.

As noted in Section 4.12.1, additional demands for public utilities and services from SLC-7 are not expected to require the construction of additional water, waste treatment, energy generating, or distribution facilities. Incremental demands for additional public services such as police and fire staff are expected to be limited (see Table 4.12.2, Operations Employment Public Service Impacts) and would be mitigated by growth in the tax base as a result of new residents.

Comment No. 186: Potential Impacts to Land Use

See response to Comment No. 172.

Comment No. 187: Opinion on Nonconcurrence of Impacts

Each of the commenters' opinions of nonconcurrence of impacts has been addressed in responses to specific comments.

Comment No. 188: Significance of Impacts to the Lompoc Terrace Ground Water Basin

As noted in Section 4.2.2, Local Impacts, the 45 acre-foot additional demand, while minor in volume, would be significant as the Lompoc Terrace aquifer is in overdraft condition.

Comment No. 189: Significance of Impacts from Project Induced Growth

See response to Comment No. 185.

Comment No. 190: Significance of Impacts due to Stratospheric Ozone Depletion

See response to Comment No. 141.

Comment No. 191: Significance of Impacts to Wildlife

See responses to Comment Nos. 148, 166, 167, 168, 169, 170 and 171.



CITY OF LOMPOC

LETTER 12

September 19, 1989

Mr. Robert Mason
H.Q. Space Division/Dev
P.O. Box 92960
Los Angeles, CA 90009-2960

Dear Mr. Mason:

Thank you for providing a public hearing and review of the SLC-7 project Draft EIS in Lompoc last week.

[192] Our concern is that the construction workers population estimate of 25% Lompoc, 75% Santa Maria, is not an historically sound assumption. we believe the split is more likely to be 50%-50%, plus or minus 5%.

Our comments of May 16, 1989 should be considered as you proceed, particularly as related to County road monies/Gann spending limit vs. already poor road conditions surrounding Lompoc.

Thank you for this opportunity to comment.

Very truly yours,

King Patrick Leonard
Planning Director

KPL:mv

cc: Jeremy Graves, Associate Planner

RESPONSE TO LETTER 12

Received From: King Patrick Leonard, Planning Director, City of Lompoc

Comment No. 192: Construction Workers Population Ratio

The percentages stated in Section 4.12 (Lompoc Valley, 25%, Santa Maria Valley, 75%) were not in reference to the construction worker population but refer to the distribution of indirect jobs that would result from local construction expenditures.

**VANDENBERG VILLAGE
COMMUNITY SERVICES DISTRICT***Pride In Community Involvement***DIRECTORS:**

J. W. Sutherland
H. E. Grantz
P. C. White
R. L. Fisher
L. P. Manton

August 28, 1989

MANAGER:

R. W. Brett

HQ Space Systems Division
P.O. Box 92960
Worldways Postal Center
Los Angeles, California 90009-2960

ATTN: Mr. John Edwards

Subject: Draft Environmental Impact Statement
Construction and Operation of Space Launch Complex 7

Water is perhaps the most critical environmental issue in this region, yet it receives scant mention in three separate locations in this E.I.R.

[193] This E.I.R. describes a consequence of this project as increasing the water usage in the Lompoc Valley by 176 acre-feet per year (section 4.2.3.2). However, it completely fails to address the environmental impact of this project on the local water basin - the Lompoc Plain aquifer which is severely overdrafted.

This aquifer was overdrafted 7990 acre-feet during the last six water years (July 1 through June 30), a very critical situation. The City of Lompoc is committed to provide water from this same overdrafted aquifer for the Allan Hancock Campus, the WYE area, Spaceport Museum and for the several hundred additional homes under construction or approved for construction. This aquifer is so overdrafted and over-committed that there is serious doubt that it can provide the water required for this project. This must be covered in this E.I.R.

The additional water consumption that would result from this project greatly exceeds the threshold of significance established by Santa Barbara County.

HQ Space Systems Division
Page 2

August 28, 1989


[194] This E.I.R. must be expanded to discuss and define the specific impacts and their mitigation on both the Lompoc Plain aquifer and the Uplands aquifer due to this project. The increasing overdraft of the Lompoc Plain aquifer results in additional water being drained from our Uplands aquifer as a consequence.

For specific details on the extent of this overdraft, I refer you to Table 7 on page 32 (copy attached) the eleventh annual report, dated June 14, 1989 on the Water Supply Conditions of the Santa Ynez Water Conservation District. This was prepared by

Stetson Engineers Inc.
224 Avenida Del Mar, Suite D
San Clemente, California 92672
(714) 492-2777

The sections of the subject E.I.R. that relate to water are totally unacceptable. They must be rewritten and expanded to define the environmental impact on the Lompoc Plain aquifer.

This environmental impact is of critical concern to all residents of the Lompoc Valley.


Howard E. Grantz
President, Board of Directors
Vandenberg Village Community
Services District

cc Encl. (1)

Table 7

**ESTIMATED ANNUAL CHANGE IN GROUND-WATER
STORAGE BENEATH THE LOMPOC PLAIN FOR THE
PAST 10 YEARS AND CURRENT YEAR (1988-89)¹**

<u>Water Year²</u>	<u>Change in Storage (Acre-Feet)</u>	<u>Accumulated Dewatered Storage at End of Water Year (Acre-Feet)</u>
1977-78		14,420
1978-79	2,670	11,750
1979-80	-390	12,140
1980-81	-1,070	13,210
1981-82	-930	14,140
1982-83	3,680	10,460
1983-84	-1,630	12,090
1984-85	-2,480	14,570
1985-86	-510	15,080
1986-87	-150	15,230
1987-88	-870	16,100
1988-89 ³	-2,350	18,450

} -7990
 Acre-Feet

¹ Based upon dewatered storage estimated by U.S. Bureau of Reclamation, all values rounded.

² July 1 through June 30.

³ Projected.

RESPONSE TO LETTER 13

Received From: Vandenberg Village Community Services District
Howard E. Grantz, President, Board of Directors

Comment No. 193: Discussion of Impacts to the Lompoc Plain Aquifer

As described in Section 3.2.1.2, the Lompoc Valley contains the City of Lompoc and surrounding communities which receive their water from both the Lompoc Plain and Lompoc Upland ground water basins. Since both basins are being used, it follows that the additional 176 acre-foot demand for water created by in-migrants to the Lompoc Valley due to project operations would be supplied from both the Lompoc Plain and Upland groundwater basins (see Section 4.2.1, Regional Impacts). Calculations of the potential additional demands to the two aquifers were combined due to uncertainties regarding the spatial distribution of SLC-7 related population increases.

Comment No. 194: Expand Discussion of Impacts to the Lompoc Plain and Lompoc Uplands Aquifers

As indicated in the above response to Comment No. 193, the Draft EIS discusses impacts to the Lompoc Plain and Upland aquifers with as much detail as possible given the uncertainties about the potential choice of residence by SLC-7 related in-migrants. The results of the analysis contained in the Draft EIS (Section 4.2.1, Regional Impacts) show that the combined impacts to the Lompoc Plain and Upland aquifers, while not large as a fraction of demand, are significant due to the current overdraft conditions in these aquifers. Mitigation measures for water resources are discussed in Section 4.2.4, Mitigation Measures. Additional mitigation measures are discussed in response to Comment No. 83.

LETTER 14

BIXBY RANCH COMPANY
A California Limited Partnership

Fred H. Bixby, Founder • 1875-1952

Kenneth C. Bornholdt
Senior Vice President
& General Counsel

September 8, 1989

HQ Space Systems Division
P. O. Box 92960
Worldways Postal Center
Los Angeles, California 90009-2960

Attention: Mr. John Edwards

Re: DRAFT ENVIRONMENTAL IMPACT STATEMENT
CONSTRUCTION AND OPERATION OF SPACE
LAUNCH COMPLEX 7

Gentlemen:

In May of 1988 at the NEPA scoping stage for Space Complex 7 (SLC-7) Bixby Ranch Company (Bixby) provided detailed comments on the environmental issues that should be addressed in the SLC-7 Draft Environmental Impact Statement (DEIS). Bixby's central concern was then and remains today that the Air Force consider fully and carefully the health and safety risks to present and future occupants of the Bixby Ranch property that immediately adjoins South VAFB, downwind and downrange of the four alternative Titan IV/Centaur launch sites. In Bixby's scoping letter dated 13 May 1988 (attached as Letter 10 at page A-83³ of the DEIS) Bixby raised a number of important questions including the following:

What are acceptable risk levels? How were those levels derived or developed? How do those risk levels compare to other similar hazardous operations (e.g., nuclear power facilities) in terms of impacts on surrounding property? What are the uncertainties with these risk levels?

As the Air Force addressed these and other questions, Bixby advanced several subjects for very specific consideration in the EIS including:

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13. The EIS should analyze the impact of potential accidents on surrounding land uses currently existing and land uses foreseeable during the operational lifetime of SLC-7.
15. The EIS should include a discussion of all mitigation measures which will limit the impacts of the project on the health, safety and welfare of the present and future human and wildlife populations on the base and surrounding area to a level of non-significance.
18. The EIS should include the size, shapes and locations of probable hazard footprint areas, based upon all possible launch factors, which will encompass all possible hazards associated with blast, sonic boom, noise, toxic fumes, debris impact and other hazardous situations.

[195] Bixby's letter formally offered the opportunity to the Air Force contractor, Environmental Solutions, Inc., "to meet with us, visit our property and review our development plans."

[196] The response to Bixby's concerns in the DEIS is woefully inadequate and clearly fails to satisfy the Air Force's statutory obligations. The DEIS does little more than announce that future development of the Bixby Ranch property would place "structures and persons . . . within the launch range hazard zone for operation at either the proposed or alternative sites, as well as other, currently active space launch complexes at South VAFB" (DEIS at p. 4-157). The DEIS then simply and impermissibly relegates that acknowledged problem to a separate proceeding in a separate time frame by stating:

In its recently updated Safety and Hazard Risk Assessment, the USAF concluded that development at Bixby Ranch or other privately owned properties east of VAFB would be incompatible with the future of space operations and safety at VAFB. As a result, the USAF has begun a detailed study of the real estate interests involved in order to define a potential land acquisition, both of the Bixby Ranch property and other affected private lands near VAFB. The purpose of such a program would be to protect the USAF polar orbit capability for as long as it is needed. The USAF will continue to oppose any incompatible development through the local planning and zoning process.

(DEIS at p. 4-157).

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The additional launches could impact potential use of the Bixby Ranch properties. The federal government lacks the authority to regulate land use on non-federal lands to prevent encroachment of incompatible uses into launch Range Safety Zones, such as would occur with development of the Bixby Ranch. Therefore, under independent action, the USAF is engaged in preliminary activities to acquire lands which, under other ownership, could adversely affect the USAF mission at VAFB.

(DEIS at p. 4-160).

[197] Immediately following the last quoted text, the DEIS inexplicably announces that none of the alternative SLC-7 sites require mitigation measures respecting land use impacts. That this is not correct is clearly established by a document recently released by the Air Force which, curiously, is not mentioned at all in the DEIS references. The omitted document does not speak blandly of "incompatible uses," but rather of unacceptable human health and safety risks on the Bixby Ranch property. Surely such unacceptable human risks require Air Force mitigation measures for land use impacts.

The Air Force Must Address
Risks to Present and Future Human Populations
on Adjoining Lands

[198] The DEIS is fullsome in its treatment of risks to VAFB base personnel at other complexes and on-site contractors in all aspects of construction and operation of SLC-7, but it is much less than that in dealing with risks to human populations downrange and downwind of the base's boundaries. Only cursory attention is paid to emergency procedures for off-site populations during launch events. There is brief mention of clearing offshore areas of commercial and recreational vessels and of recommendations made for removal of non-essential personnel from offshore oil and gas platforms (DEIS at p. 4-174), and there is also mention of an agreement between VAFB and the County Parks Department, the County Sheriff, and the California Highway Patrol to close Jalama Beach County Park during launch events (DEIS at p. 3-126 to 3-127).

[199] It is noteworthy and troubling in light of the apparent judgment that has been reached about dangers to human populations on Bixby Ranch that no approach has ever been made

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to Bixby about any agreement to protect human occupants present on Bixby's property. The DEIS should, therefore, explicitly state that no evacuation agreement has been reached with Bixby to protect human occupants of Bixby's property.

- [200] Equally troubling is the failure of the DEIS meaningfully to address the health and safety risks to future residents of the planned cluster residential development on Bixby Ranch. The segments of the DEIS quoted above do state that such a development would be, in the judgment of the Air Force, incompatible with Vandenberg's space mission, but no information or analysis is provided on the nature and extent of the perceived risks or how they might be ameliorated. For
- [201] example, the Bixby request for hazard footprint information was ignored totally. All that is provided is the conclusion of incompatibility as determined by a "Safety and Hazard Risk Assessment" which is cryptically summarized in the DEIS (DEIS at pp. 4-127 to 4-137). Despite the DEIS offer to provide such Assessment, Bixby's request in its 13 May 1988 scoping letter that it be furnished copies of all documents used as references in the EIS and Bixby's recent specific requests in letters dated 9 August 1989 and 28 August 1989 (copies attached), such
- [202] Assessment has not been made available to Bixby. Thus, Bixby has been totally denied the opportunity to comment on an important conclusion in the DEIS. As a result, the DEIS process is fatally flawed.

Bixby has been furnished another significant document that does indeed address the human health and safety impacts at Bixby Ranch. In a "White Paper on Bixby Ranch Update," stamped 15 July 1988 but furnished to Bixby by the Air Force under a cover letter of 14 October 1988 (Bixby White Paper), the conclusion was reached that:

A developed Bixby Ranch would present a quandary to the Center; full-scale evacuation would undoubtedly be impractical, so the options would be to accept an unprecedented degree of risk, or defer the operation for better wind conditions. Launch delays while waiting for favorable winds would be inordinately expensive, and in practice a whole range of vital launch azimuths would have to be eliminated. Accepting the risk is simply untenable - while most flights are successful, and a "winning streak" might hold for several launches, eventually a disaster will occur that the Air Force can not tolerate.

(Bixby White Paper at p. 10)

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[203] For some reason the Bixby White Paper was not mentioned in the DEIS nor included among the 16 pages of documents referenced in Chapter 8 of the DEIS. In order that it may at least become part of the record, a copy is attached to this comment letter. Attaching the Bixby White Paper to this letter, of course, does not redress the Air Force's failure to make the information and analysis available in the NEPA public commenting process.

[204] In light of the conclusions in the Bixby White Paper the clear inference in the DEIS that over water launch azimuths at Vandenberg of 150 to 201 degrees are safe is incorrect and should be clarified (See DEIS at p. 1-5). The Bixby White Paper shows that launch azimuths within those boundaries create unacceptable levels of risk to the public on Bixby property under Air Force launch criteria. Likewise, the statement that VAFB is the only location where southerly launches of large [205] boosters can be made at acceptable risk levels is not true when compared to the conclusions reached in the Bixby White Paper that such launches reach unacceptable levels of risk (See DEIS at p. 2-2). Finally, why would the Air Force conduct an acquisition study for the Bixby and other property if hazards [206] to public safety can be maintained at "acceptable levels"? These inconsistencies on core health and safety concerns must be addressed to meet the Air Force's NEPA obligations.

The Air Force Must Provide for
Mitigation of Adverse
Environmental Impacts

NEPA in Section 102(2)(C)(ii) imposes on federal agencies the requirement to prepare EISs for federal actions significantly affecting the human environment and requires that those EISs deal with "any adverse environmental effects which cannot be avoided should the proposal be implemented." The binding regulations of the Council on Environmental Quality fleshing out this language expressly oblige federal agencies to address mitigation measures. (40 C.F.R. §§ 1502.14(f), 1502.16(h)).

The Court of Appeals for the Ninth Circuit (which includes California) has underscored the importance of the mitigation requirement and the need for full EIS treatment of mitigation measures. Methow Valley Citizens Council v. Regional Forester, 833 F.2d 810, 819 (9th Cir. 1987) ("The Forest Service's EIS contains scattered pages in which they enumerate

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possible mitigation measures and identify mitigation goals . . . [These are] lacking both a detailed description of required or possible mitigation measures, and any analysis as to the effectiveness of these measures"); Oregon Natural Resources Council v. Marsh, 832 F.2d 1489, 1494 (9th Cir. 1987) (Because the wildlife mitigation plan here merely lists measures to be used and includes neither an analysis nor an explanation of effectiveness, it is inadequate to satisfy the NEPA or Counsel [sic] on Environmental Quality mitigation guidelines"); Northwest Indian Cemetery Protective Association v. Peterson, 795 F.2d 688 (9th Cir. 1986).

- [207] In the DEIS for SLC-7 the Air Force's omission is more egregious than that of any of the agencies in any of the above cited cases. The DEIS blithely states that no mitigation is required for land use impacts (DEIS at pp. 4-160 and 4-161). This, of course, is plainly wrong as the White Paper clearly demonstrates. The DEIS itself also demonstrates the error in [208] its mention of the "independent action" and "detailed study" to be undertaken to acquire property interests near VAFB that otherwise would be incompatible with the Air Force's Vandenberg mission. Further, the fact the Air Force has begun a "study" of the possibility of purchasing Bixby's incompatible interests does not, in fact, minimize any potential environmental impact [209] (See DEIS at pp. S-8, 2-71 and 2-78). The DEIS should not merely speak of a future study, the outcome of which is totally uncertain, and all references to that study should be deleted (See DEIS p. 2-71, Sec. 2.4.13 and the second sentence of paragraph 2 of DEIS p. 2-78, Sec. 2.5.13). Finally, the statement in the DEIS that "no mitigation measures are proposed [210] for Land Use" (Sec. 2.5.13 at DEIS p. 2-84) is totally unwarranted. Instead the DEIS should state that the Air Force must acquire such land interests as are needed to remove the adverse effects on the USAF mission at VAFB. The actual acquisition of incompatible land interests is a mitigation measure not a cumulative impact, and a "study" is neither one. In fact, the study of the Bixby property is done and the only [211] appropriate mitigation measure for that property in light of it is to acquire the incompatible land interests or change the launch azimuths to eliminate the hazards.

Although the Air Force is contemplating some mitigation measures despite failing to recognize them as such, those measures are inadequate and are impermissibly proposed to be the subject of a separate, future proceeding. The following are only a few of the matters that should have been considered by the Air Force in the DEIS itself and that should be subject to NEPA's public commenting process:

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[212] What, after all, is the hazard footprint and, within that footprint, what are the specific risks to present and prospective uses of impacted privately owned land?

[213] What measures are necessary to warn and otherwise protect the owners and occupants of potentially impacted private lands?

[214] To what extent will it be necessary to evacuate identified private lands during launch events and what measures should fairly be made respecting evacuations such as giving timely launch notices and compensating impacted landowners?

[215] Under what circumstances and with respect to what specifically identified lands will there be a need for a taking of private property interests in order to accomplish the Air Force's space mission while protecting human health and safety?

[216] In instances where such takings must occur, what should be the nature and extent of the takings with respect to each potentially impacted privately owned parcel of land?

[217] With respect to the possible future residential development on Bixby Ranch, the Air Force's mitigation obligations ought to be no less than those obligations imposed on the Navy when it considered the possible relocation of its Naval Oceanographic Program from Prince George's County, Maryland. In Prince George's County v. Holloway, 404 F. Supp. 1181 (D.C. Dist. 1975), the court held that the Navy failed to comply with NEPA when it failed to address "disturbing questions" about the availability at the proposed relocation site of adequate housing and schools for low- and moderate-income groups and racial minorities. In speaking to the Navy's NEPA obligations the court stated:

Where, as here, adverse environmental effects are noted, the federal agency, as part of its statutory obligation to evaluate alternatives, must consider possible methods for ameliorating or mitigating the environmental impact at the site chosen.

404 F. Supp. at 1187.

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The court specifically rejected the Navy's handling of the housing and schooling concerns separately from the EIS process that focused on the relocation project as a whole:

One of the primary purposes of the Act was to prevent the very type of fragmented and compartmentalized analysis that occurred here. Instead, the statute directs that the agency employ a more integrated and comprehensive approach which takes account of the overall effect of the various projects.

404 F. Supp. at 1186.

[218] Surely, from the perspective of NEPA's explicit concern for impacts on the human environment, the Navy's need to consider the housing requirements of relocated personnel does not differ significantly from the Air Force's need to consider the health and safety implications for future residents of a housing development adjacent to South VAFB within the hazard zone. These housing impact questions are both clearly part and parcel of the total project impacts required to be considered by the two branches of the armed services.

The Alternative Safety Risks
at Vandenberg and Cape Canaveral
Must be Analyzed

[219] The DEIS discussion of alternatives is deficient because there is no analysis of the comparative safety of launches from Cape Canaveral and from VAFB. In several places the DEIS makes conclusory statements that crucial polar orbits cannot be "safely" achieved at Cape Canaveral which is purportedly constrained to azimuths between 35 and 120 degrees. In contrast the DEIS claims that VAFB allows "over-water" launch azimuths of 150 to 201 degrees, which by inference are branded "safe" (See DEIS at p. S-2, 1-5 and 2-35). That inference of safety is, however, totally destroyed by the Bixby White Paper as to VAFB launches within the referenced azimuths.

[220] Thus, the DEIS presents only unexplained, unanalyzed over-water assumptions of safety. What is required instead is a thorough analysis and comparison of the precise human health and safety risks at Cape Canaveral and VAFB. The unsupported conclusions in the DEIS are clearly insufficient.

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The Air Force Must Take Account of
Environmental Advantages of
the SLC-6 Site

[221] If the proposed project is to go forward, the comparative environmental impacts expected at the four alternative sites strongly favor choosing the site of the existing SLC-6 facility. Entirely apart from arguments grounded on seeking to gain some benefits for the taxpayers for an expensive facility that has been moth-balled since the day of its completion, the use of the SLC-6 site would have the least impact on the environment. The choice of Cypress Ridge, Boathouse Flats, or Vina Terrace would disturb presently undeveloped lands and would also impair a valued visual resource from both offshore vessels and on shore sites such as Jalama Beach County Park. In contrast the SLC-6 site has already been altered by development, and Titan IV/Centaur launch facilities installed there would not be visible from Jalama Park (DEIS at pp. 3-97 to 3-99 and 4-101 to 4-104). The high values ascribed to California's remaining natural coastal landscapes argues strongly that only the most compelling of needs should result in their being sacrificed.

The only environmental impacts identified in the DEIS that are unique to SLC-6 involve the partial demolition of the existing facilities and the disposal of wastes generated by that demolition. Clearly the most significant of those impacts would be the need to dispose of hazardous waste generated by flushing hypergolic-contaminated fuel and oxidizer systems using a total of 82,000 gallons of liquid chemical. Although the residual liquid would have to be treated as a hazardous waste, the DEIS indicates that "if handled properly, the hazardous waste generated during the flushing activity would not have significant impact on the local environment" (DEIS at p. 4-89).

[222] Thus, the DEIS discloses no compelling argument against choosing the SLC-6 site and discloses no non-environmental reason favoring the other sites that would warrant the environment sacrifice that would ensue were any of the other sites chosen.

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The Deficiencies in the DEIS
Oblige the Air Force to
Prepare a Supplemental DEIS

- [223] In view of the serious deficiencies in the Air Force's compliance with NEPA the Air Force should complete its "study" (or admit that the Bixby White Paper is that study) fashion appropriate mitigation measures based on that study's outcome, and prepare an appropriate supplemental DEIS. Such is mandated by the Council on Environmental Quality regulations whenever "there are significant new circumstances or information relevant to environmental concerns and bearing on the proposed action or its impacts" (40 C.F.R. §1502.9(c) (1)(ii); See Stop H-3 Association v. Dole, 740 F.2d 1442, 1463-65 (9th Cir. 1984) (holding that new information obligated the Secretary of Transportation to prepare a supplemental EIS in connection with a proposed highway)). Here the Air Force is clearly obliged to complete the gathering of the new information essential to
- [224] fashion mitigation measures and then set forth in detail what mitigation measures are required and an analysis demonstrating their effectiveness. See Stop H-3 Association v. Dole, 740 F.2d at 1463 ("A federal agency has a continuing duty to gather and evaluate new information relevant to the environmental impact of its actions, even after the release of an EIS.")
- [225] Once a supplement is prepared the Air Force must circulate and file it in the same fashion as the DEIS unless alternative procedures are specifically approved by the Council on Environmental Quality. 40 C.F.R. §1502.9(c)(4).

* * *

We appreciate the opportunity to comment on the DEIS and renew our previous offer to meet and review the serious safety issues that have been raised by this project but as yet not properly analyzed as to the Bixby property.

Very truly yours,


Kenneth C. Bornholdt

KCB/vja

WHITE PAPER

15 JUL 1988

ONBIXBY RANCH UPDATE

I. OBJECTIVE. The objective of this paper is to present a perspective on the effects of a housing development on the Bixby Ranch adjacent to Vandenberg AFB, and to update the safety hazards assessment previously accomplished in 1983. The discussion following concludes that the potential hazards are more severe than those projected in earlier studies, due principally to a shift from Space Shuttle to expendable boosters of the Titan family, along with a significant increase in the total space vehicle launch frequency. We conclude that a residential cluster on Bixby property is basically incompatible with the national defense mission and should be resisted if the Air Force is to maintain the geographically unique Vandenberg AFB space launch port for high inclination/polar satellites.

II. BACKGROUND.

1. BIXBY RANCH. The 23,700 acre Bixby property is comprised of two original Spanish land grants: the Jalama Ranch and the Cojo Ranch. There are 1800 acres additional on the ocean side owned by Chevron which the Bixby owners are negotiating for, which could bring the total property to 25,500 acres. It is zoned as 'Agricultural Preserve' (the Chevron parcel zoning also allows for oil production facilities) and is used today for cattle grazing. The Santa Barbara Countal Coastal Plan and Coastal Zoning Ordinance provide for cluster residential development on 2% of gross acreage. If a development plan is approved, Bixby could develop as many as 510 units on 510 acres including the Chevron parcel. Figure 1 shows the relationship of the Bixby property to the base with a marker indicating the likely location of the cluster, roughly 10 miles southeast of the launch facilities on Vandenberg. The Figure 1 also shows the location of Jalama Beach County Park, which for safety reasons is evacuated routinely for certain space launch azimuths today.

The foremost goal of Safety is to provide positive protection to life and property through controls on a missile or space booster launch. A real-time missile flight safety system has been developed and used for years to provide positive protection within prescribed Impact Limit Lines (ILL). The system is designed to trace, predict, and display vehicle flight performance in order to contain debris from destruct action within this ILL. The ILL must diverge outward from the main ground trace of the vehicle to account for debris scatter, wind effects, time delays for human response and relaying a destruct signal, and normal performance deviations of the vehicle itself. Inside of the ILL, positive protection cannot be guaranteed; for that reason, the ILL is constructed to exclude population centers to the extent possible, with special control measures such as evacuation for any remaining within it. The proposed Bixby development falls inside the ILL for most of the space launch systems at Vandenberg. The implications of this are described in more detail in the Risk Analysis section below.

2. PRIOR DEVELOPMENT PLAN. A development plan was proposed by the Bixby owners in the 1981 time frame for 470 residential units on 470 acres. The Air Force pursued three courses of action to counter this encroachment threat. First the Air Force objections to the proposed development were presented to



BIXBY DEVELOPMENT

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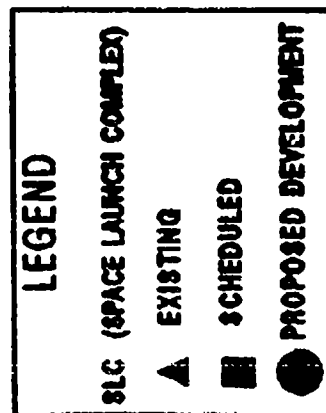
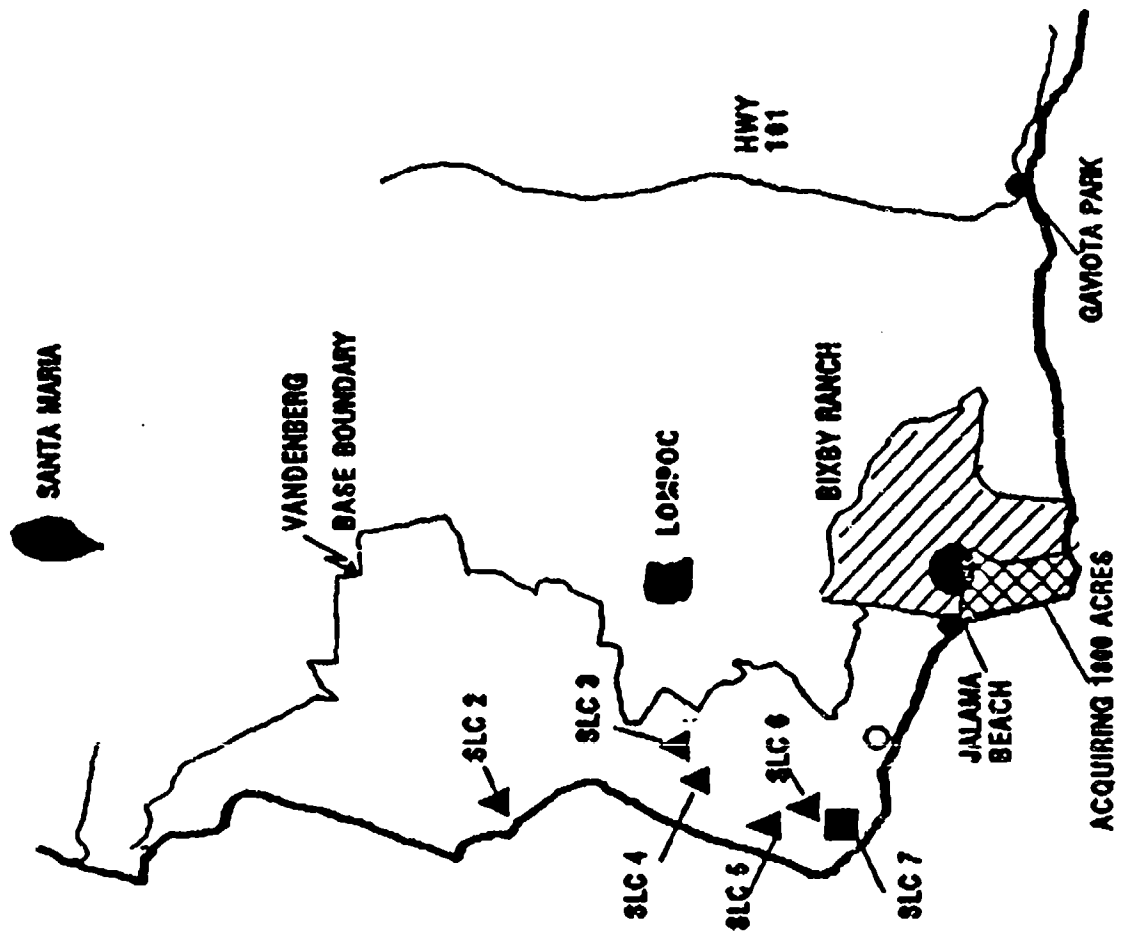


Figure 1

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local government representatives. The objections on the basis of public safety were given at hearings before the Santa Barbara County Planning Commission, the Santa Barbara County Board of Supervisors and the California Coastal Commission. Separate meetings were held with staff members of the county and state commissions.

A second action was to meet directly with Bixby Ranch Company representatives, allowing a "one-on-one" discussion without debating the differences in public. Mutual concerns were discussed with a view toward finding a resolution of the development issue acceptable to the Air Force and Bixby. Lastly, headquarters (SAC, AFSC, and AF) were advised of the encroachment issue impact on capability at Vandenberg AFB and the possibility that a restrictive easement through condemnation proceedings would be required. The Bixby development plan was withdrawn by Bixby in 1983 because it did not meet the "clustering" requirement of the County Coastal Plan and Ordinance. The Air Force adopted the following approach in 1984 for Bixby Development:

- (a) Establish a planning "wedge" in the outyear MCP.
- (b) Take no further action pending Bixby submission of a revised plan.
- (c) Make the "utmost effort to discourage and defeat a development plan through efforts with local government."

3. CURRENT BIXBY DEVELOPMENT. Bixby Ranch has reinitiated development planning and visited the Deputy Assistant Secretary of the Air Force for Installation (SAP/RI) office this past April to discuss the situation. Vandenberg AFB officials have not yet been contacted, nor has the Santa Barbara County Planning Commission received a new draft plan. We understand that the development concept involves nearly 500 single residences, 70 multi-family units, a golf course with a large adjacent lodge, and an airstrip. Very briefly, Bixby's process would involve submittal of a development plan to the county with a request to change the zoning to "ARC-Agricultural-Residential Cluster Overlay District," a type permitted by the Santa Barbara County Coastal Plan and Coastal Zoning Ordinance. The development plan would be accepted or denied by the County within one year, and numerous public hearings would be held during that time, and subsequently as the various subdivision maps are produced and acted on. The zoning change and approval of specific construction elements within the plan would come from the County. The California Coastal Commission would also have approval authority for various elements of the plan.

The Bixby development project would probably require at least two or three years from first notice to the county until necessary approvals can be obtained from the County Planning Commission and Board of Supervisors and the California Coastal Commission.

III. HAZARD DISCUSSION.

1. LAUNCH MODEL. Prior to the Challenger disaster in January of 1986, the Vandenberg space launch schedule was heading toward a workload involving three or four Space Shuttle launches per year, a smattering of smaller boosters such as Scout, and a phase-out through the 1980's of Atlas, Thor, and Titan family expandable boosters. The man-rated Shuttle -- which before January 1986 was

estimated to have a probability of failure one order of magnitude lower than for the large expendable booster types -- still created enough risk to a development project at Bixby Ranch that such a project was deemed incompatible. Most of the Shuttle exit azimuths were in an easterly direction and the impact limit line encompassed Bixby and other property out to Caviota pass, about 25 miles down the coastline.

Today's projection into the 1990's shows increasing use of expendables, with 6 to 10 Titan II, Titan IV, and Titan IV/Centaur launches per year. Additionally, the likelihood of commercial expendables is growing, involving Atlas and Thor-family vehicles and new low-cost boosters such as those being developed by the American Rocket Company. The Air Force is also studying the need for very large vehicles at Vandenberg AFB in the 1990's, capable of payload of 90-100 thousand pounds, with projected high launch rates.

Summarizing, the launch rates in the 1990's are expected to be higher compared to projections made in 1981-1983. The vehicles will be complex launch systems like the Shuttle without the man-rated features. Because there is no other geographic location in the continental United States that permits launching in a southerly direction without overflying populated areas, Vandenberg AFB capabilities must be preserved. Bixby Ranch development is incompatible with the future mission model for Vandenberg AFB.

2. WEATHER. The hazards associated with booster flights can be assigned to four categories; debris, toxic exposure, secondary effects (smoke and fire), and sonic effects. Each of these is directly affected by prevailing weather conditions at the time of the prelaunch or launch activity.

The prevailing winds over Vandenberg are out of the west-northwest more than 90% of the time. Figure 2 depicts the east-west component of annual winds from the surface to 70,000 feet. Residents of this coastal region are familiar with trees and shrubs that all have a permanent leaning with branches canted to the southeast. Surface winds tend to be from the northwest, shifting around more to due west and increasing altitude.

With such prevailing winds, debris from a booster explosion is carried toward the southeast quadrant. While the impact locations of the fragments depend on many factors, the denser atmosphere at lower altitudes will exert the most influence on debris transport due to winds, and lighter fragments will be carried farther from the "vacuum" impact point than heavier pieces. For a Titan IV-class vehicle and the geometry of the launch site and Bixby development site, the period of endangerment will generally fall between 50 and 80 seconds of flight, and the significant fragments would be spread through a region on the order of 20 miles long and 6 or 8 miles wide. Figure 3 shows the debris dispersion for selected pieces from a destruct at about 50 seconds of flight with average winds, banana-shaped by the influence of the wind. The debris hazard is of vital importance in this examination, and is treated in more detail in the Section IV - Risk Analysis.



BIXBY RANCH UPDATE

VANDENBERG ANNUAL WIND PROFILE

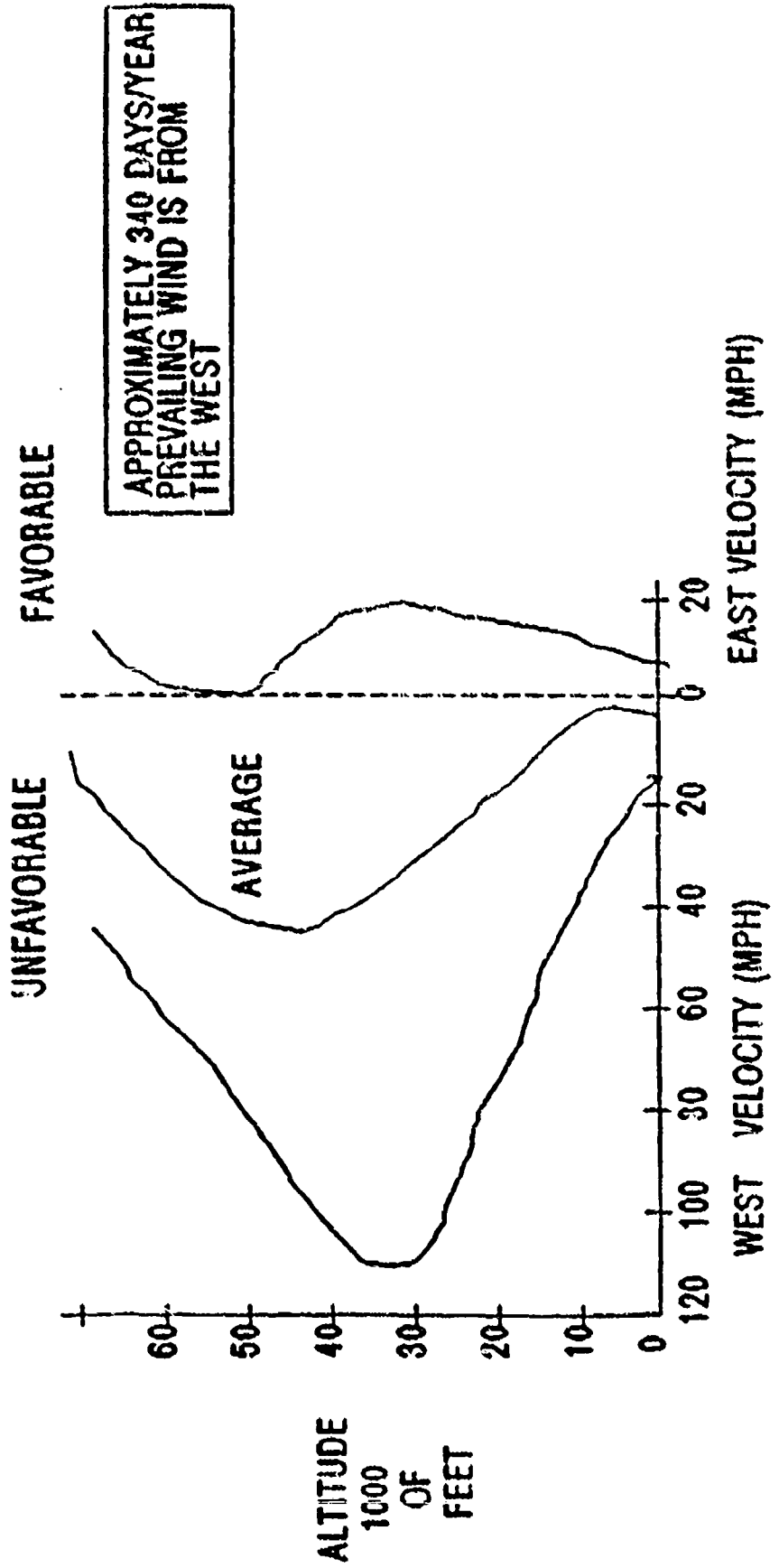


Figure 2

Titan boosters release toxic products to the atmosphere during normal performance which must be considered, and can release very large amounts in a catastrophic abort situation. During normal flight, the solid motors of the Titan 34D/Titan IV emit about 30,000 pounds of hydrogen chloride, a toxic gas that irritates the throat and respiratory system. If an explosion on or near the pad occurs, 200,000 pounds or more of HCL gas will be released in a short period of time, plus more than 10,000 pounds of vaporized, uncombusted liquid fuel and oxidizer, which are particularly hazardous. Because the AF Surgeon General has declared that the vapor from liquid propellants is potentially carcinogenic, public emergency exposure limits have been reduced for the fuel by factors of 80 to 120. Given the low level prevailing wind direction on South Vandenberg, toxic products from Titan facilities will be blown generally in the direction of the proposed Bixby development.

In addition, an explosion on or near the pad will initiate brush fires which will create a huge volume of smoke, less harmful but extremely irritating. The brush fires around the Titan pad following the accident in May, 1986 burned for over a day before being extinguished. Smoke was carried many miles to the southeast, and complaints were received from Jalama Beach and communities further down the coast.

A vehicle could conceivably be destroyed at a point early enough in the trajectory where the debris cannot yet reach Bixby, but high enough in altitude such that the toxic gases are not a problem. Ground fires and smoke from impacting debris are still a serious concern in that case, and fires can consume many thousands of acres in the area's semi-arid environment before being brought under control, depending on the time of year.

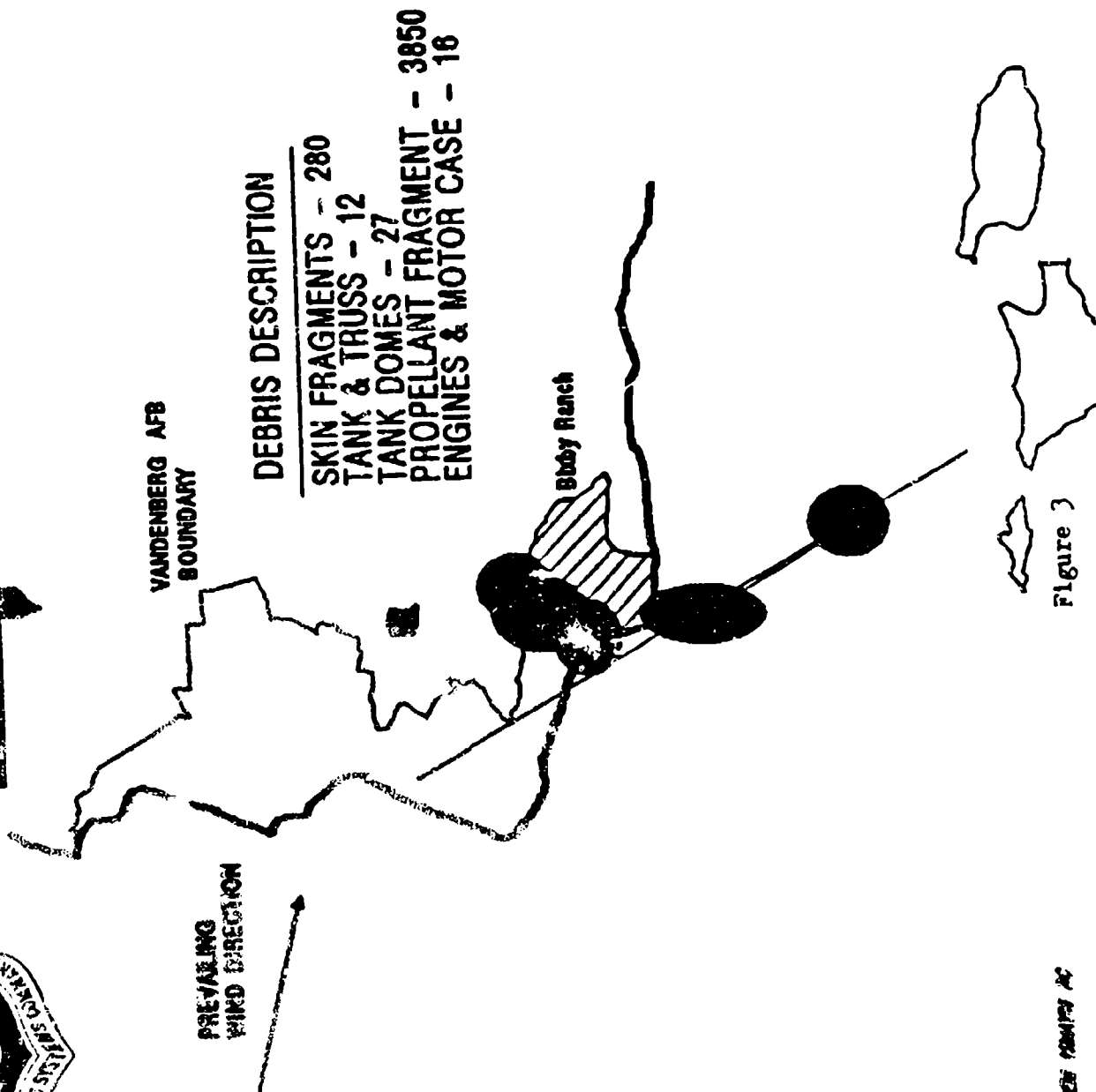
Another frequent Vandenberg weather phenomenon, temperature inversion, enhances the transport of toxic propellants and smoke. These inversions, with bases between 900-1400 feet AMSL, act as a cap or lid over the ground layer, inhibiting vertical mixing. The net result is higher toxic concentrations carried further downwind when an inversion is in place.

Titan boosters generate considerable noise at liftoff, and mandated protection for the general public generally extends 5 or 6 miles out from the pad, not a serious problem with respect to Bixby. However, a catastrophic abort could result in a high-order detonation of the solid propellants, creating a shock wave. The shock wave could break windows up to 10 miles away, presenting hazards to persons near them. Furthermore, the very frequent temperature inversion condition at Vandenberg could focus the blast overpressure and increase the range of broken windows by a large factor.

3. RISK MANAGEMENT. The degrees of risk presented by debris, toxic, and blast overpressure are analyzed prior to launch using the actual weather conditions at both the Eastern and Western Test Ranges. If the risks are too high, the Center Commander will defer or scrub the operation until weather conditions change for the better. At Vandenberg AFB, conditions have been known to persist because of the unusual climatology, and missions have occasionally been scheduled and rescheduled numerous times to finally gain approval. Today's constraints mainly involve the city of Lompoc and its environs, to the northeast of the launch pad area, and do not present a major handicap to launch operations. The Bixby development, on the other hand, being downwind and downrange of the launch complexes, introduces an element of



Titan IV Failure



extremely high significance to risk management and acceptance.

IV. RISK ANALYSIS.

1. **DEBRIS HAZARDS.** The mechanism of greatest risk to people is from debris, as it can rain down without warning. Ordinary houses do not afford much protection from fragments. The debris impact pattern can only be described in a probability distribution sense. A booster can self-destruct, or destruct commands can be sent to it by a Range Safety Officer observing an anomaly or off-course performance.

The ILL concept introduced above in Section II needs some further elaboration. The ILL establishes the boundary of positive control, but because it is defined long in advance of the launch it takes into account only the expected winds, maximum turn rates, nominal performance envelopes, and average margins for response delays. It is necessarily developed under the assumption that catastrophic destruction will occur at each point along the trajectory.

For the actual launch, an analysis of the risks must be undertaken for all of the people and property remaining within the ILL using the real failure rates and measured winds. The analysis must include people at tracking and instrumentation sites, power plants, the outside observers, and the off-base public. The analysis must show whether the launch can proceed, if certain areas need to be evacuated, or if the operation should be delayed awaiting more favorable conditions.

The major tool used to estimate these risks for ESMC and WSMC is the Launch Area Risk Analysis (LARA) computer program. LARA is a highly sophisticated program that integrates the specific flight trajectory with failure rates, wind conditions, lift and drag characteristics, debris distributions, and velocity changes from the explosion, to provide risk estimates on the ground. LARA provides individual and cumulative risks for all sites, and employs a library of populations as well as compensating for four levels of sheltering protection. LARA it provides the best estimate obtainable with what we know about modeling the process today. One can submit conservative inputs to LARA to arrive at a conservative estimate. For our studies in this paper, we have used average annual winds and the known failure rates of the launch vehicles. Moreover, the debris fragments are based on vehicle contractor analysis and exposure times are consistent with on-azimuth vehicle failures.

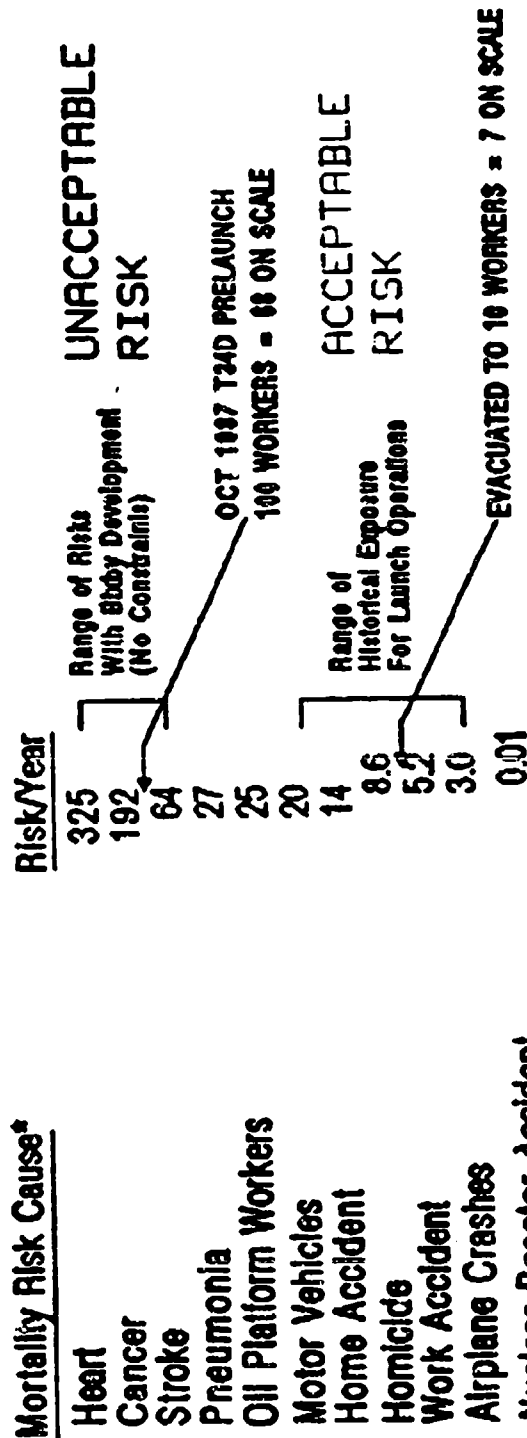
2. **RISK ACCEPTANCE AND MORTALITY COMPARISONS.** LARA is a vitally important tool for the Commander at launch time. An understanding of the meaning of the estimates it provides can be obtained from Figure 4, which lists the levels of risk from several hazards encountered in daily life. Note that the risks are scaled for convenience to an annual basis per 100,000 population. The bracket at the top of the list shows the range of risks that would be encountered regularly, using average winds and realistic failure rates, if Bixby were developed to a population of 1700 or more. By contrast, with roughly 50 persons total, Bixby undeveloped presently contributes less than one unit on this scale.

The arrows to the right in Figure 4 indicate risk levels predicted by LARA for workers on a specific oil platform for a Titan launch in October, 1987. The platform population of slightly over 100 workers presented a risk of 68 on this scale, unacceptable for launch approval. Evacuated down to 10 persons,



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MORTALITY RISKS PER 100,000 POPULATION IN THE UNITED STATES



*Information Please Almanac 1988 Edition

the risk exposure was reduced to the equivalent of about 7, and approval was given to launch. (NOTE: the request to evacuate and follow through was made possible by the lease agreements involving Vandenberg AFB operations managed by the Department of Interior, Minerals Management Service.)

For an Atlas operation in January of 1988 LARA indicated a risk to Lompoc that exceeded 50 when converted to this scale. The launch was scrubbed, restarted the next day, and the winds had shifted enough that the risks to the same area had dropped to 0.02 equivalence.

A developed Bixby Ranch would present a quandary to the Center: full-scale evacuation would undoubtedly be impractical, so the options would be to accept an unprecedented degree of risk, or defer the operation for better wind conditions. Launch delays while waiting for favorable winds would be inordinately expensive, and in practice a whole range of vital launch azimuths would have to be eliminated. Accepting the risk is simply untenable -- while most flights are successful, and a 'winning streak' might hold for several launches, eventually a disaster will occur that the Air Force can not tolerate.

3. SPECIFIC TRAJECTORY EXAMPLES. Sample LARA-derived products are shown in Figures 5 and 6 for two Titan operations. These are risk-contour plots indicating the influence of average winds over the Bixby area time-of-hazard. 'Unacceptable' on these charts means that the risks are in the upper bracket of Figure 4 and are in excess of an amount the Center Commander has ever approved in the past. Such risks would place the general public at a risk above their exposure in daily living.

As discussed above, the prevailing winds are such that the true 'line of acceptability' for the winds on launch day would be displaced to some extent east or west of the 'average.' However, it may not move very far in either direction, and the number of days waiting for favorable conditions is indeterminate. For some azimuths and launch window constraints, it is much longer than just a few days.

The critical space missions in the next decade require a projection of the frequency of use of various azimuths for the several Titan programs in the 1990's. By examining a series of LARA runs done originally for evaluating the hazards to offshore oil rigs, we estimate that 90% of all the Titan launches in the mid-90's would have the 'unacceptable' boundary enclosing the proposed Bixby development project for average wind conditions.



TITAN IV FROM SLC 4 - 160 deg AZIMUTH

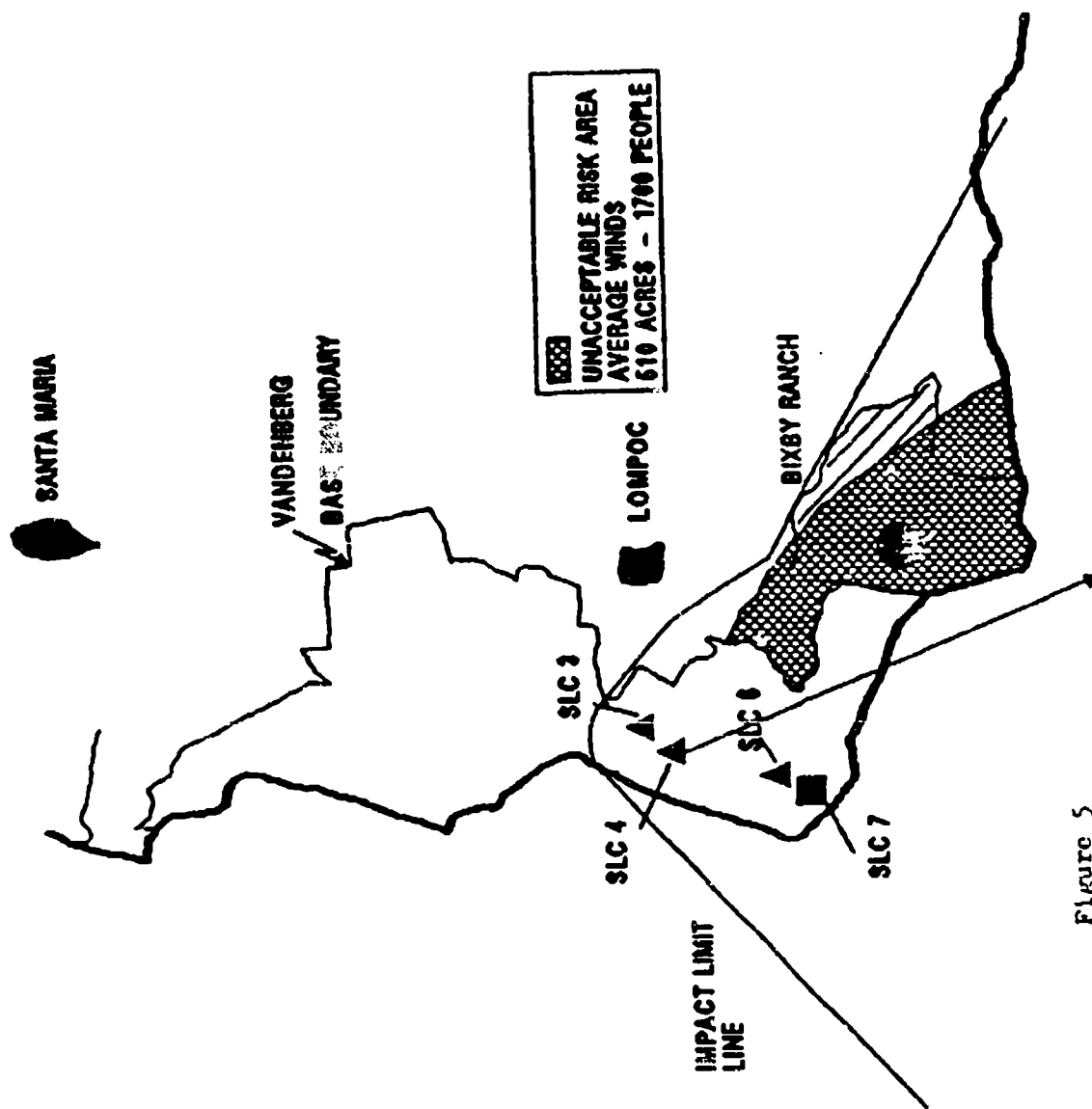
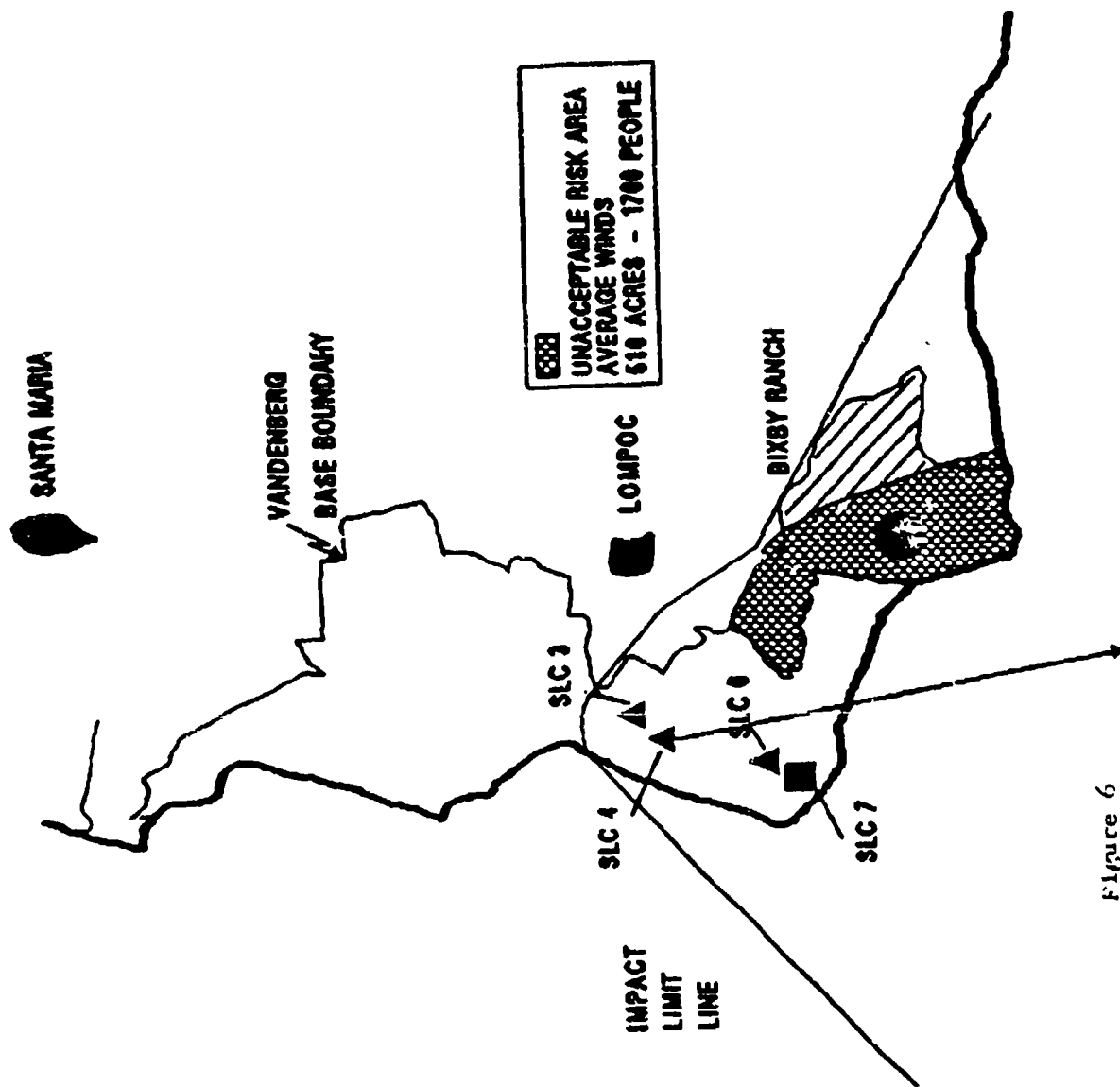


Figure 5



TITAN II SLC 4 - 172 deg AZIMUTH



LEGEND

- SLC (SPACE LAUNCH COMPLEX)
- ▲ EXISTING
- SCHEDULED
- PROPOSED DEVELOPMENT

Figure 6

V. CONCLUSIONS.

The Bixby Ranch property is situated downrange and downwind from Vandenberg such that the hazard level is unquestionably high for the space launch business. It is difficult to imagine a worse location for a substantial number of people from the risk standpoint.

Over the years, we have become much more sophisticated in estimating risks at Vandenberg, and the inherent conservatism of the process has given way to a high degree of refinement in the way of models and computer programs. We do not believe it is overly conservative to state that a Bixby development would have far-reaching consequences on the space launch programs at Vandenberg AFB. Because Vandenberg is the only viable polar launch base in the continental U.S., the Bixby development would be a major impediment to the national military space program.

RESPONSE TO LETTER 14

Received From: Bixby Ranch Company (September 8, 1989)
Kenneth C. Bornholdt, Senior Vice President and General Counsel

Comment No. 195: Meeting with Bixby Ranch Company

On November 22, 1988, personnel from USAF and the SLC-7 environmental contractor, Environmental Solutions, Inc. met with Bixby Ranch personnel (Ken Bornholdt and John Baucke) to visit the Bixby Ranch and discuss Bixby Ranch Company concerns.

Comment No. 196: Consideration of Real Estate Interest Acquisition in Separate NEPA Document

The CEQ Regulations (40 CFR Part 1508.25) provide guidelines for determining if actions are sufficiently interconnected to require evaluation in a single environmental document. Actions should be considered in a single environmental document if they are (1) connected, (2) cumulative, or (3) similar. The appropriateness of consideration of real estate interest acquisition (Notice of Intent To Prepare an EIS, to be published in the Federal Register in late 1989) separately from SLC-7 can be determined by the application of these guidelines.

Connected Actions. Actions are connected if they:

- (i) Automatically trigger other actions which may require environmental impact statements.
- (ii) Can not or will not proceed unless other actions are taken previously or simultaneously.
- (iii) Are interdependent parts of a larger action and depend on the larger action for their justification.

The construction and operation of SLC-7 would not automatically trigger the necessity to obtain an interest in lands near South VAFB. There is no conflict between the proposed action and current land use plans, policies, or controls for the area concerned. The proposed SLC-7 can proceed without any prior or simultaneous actions regarding such real estate interests.

The need to obtain an interest in these lands is triggered by the potential for future development on those lands that would be incompatible with the current national defense mission of VAFB. The potential for significant development of lands adjacent to South VAFB has been in the past and would continue to be incompatible with launches from existing SLCs on South VAFB.

including SLC-2, SLC-3, SLC-4 East and West, and SLC-5. Development of these lands would also be incompatible with future operations at SLC-6, should it be activated for Space Shuttle or other launches.

SLC-7 can proceed without the acquisition of real estate interests in properties adjacent to South VAFB since current population levels and population levels in the reasonably foreseeable future present acceptable risks. Only those projects that are reasonably definite and contemporaneous with each other need be considered in an EIS. If the Bixby Ranch or other properties adjacent to South VAFB were to be developed to a level far greater than current agricultural zoning allows, then the risks to the general population would increase to an unacceptable level. At this point in time, consideration of substantially higher levels of population is speculative since a plan for development has not been submitted to the County of Santa Barbara or other government agency. Any such plan is subject to considerable social and political controversy and could be denied during the agency review and approval processes required by the Santa Barbara County Planning Commission, the Santa Barbara County Board of Supervisors, and the California Coastal Commission. In addition, there are physical impediments to development including the provision of services to the area, such as major road improvements and the supply of potable water.

These two potential actions are not interdependent parts of a larger action that depend on the larger action for their justification. These actions are not, for example, parts of a highway network that have utility only when considered as a part of the larger grouping. Each of these potential actions has independent utility and represents a usable and reasonable expenditure without other considerations. The utility of SLC-7 is primarily to the Department of Defense space program, while the utility of real estate interest acquisition is to VAFB and its tenant programs in general. In addition, each of these potential projects would be separately funded and approved by Congress.

Cumulative and Similar Actions. In addition to not being connected, the potential real estate interest acquisition falls outside of the scope of the SLC-7 Draft EIS since the actions are not cumulative or similar. Viewing both projects together are not expected to cause cumulatively significant impacts. The projects are dissimilar since one proposes the construction of a space launch complex and the other proposes to acquire an interest in lands adjacent to South VAFB to protect the current mission at VAFB, regardless of the construction of a new space launch complex.

Comment No. 197: Mitigation Measures for Land Use Impacts

As stated in Section 4.11.5, Mitigation Measures, it was determined in the SLC-7 Risk Assessment (Environmental Solutions 1989) that at current population levels, USAF safety procedures mitigate risks to the public to an acceptable level. In addition, mitigation measures are not proposed for land use since there is no conflict between the proposed action and current land use plans, policies, or controls for the area. It is speculated that the unidentified referenced document was prepared as an internal USAF planning document and refers to hypothetical unacceptable risks if the population of the Bixby property increases significantly.

Comment No. 198: Emergency Procedures for Offsite Populations

Emergency procedures are discussed in Section 3.11.1, Regional Environment, at a level of detail that is consistent with the findings of the analysis undertaken for the SLC-7 Risk Assessment, per CEQ Regulations (Parts 1500.1, 1500.2, 1500.4, 1501.7, 1502.1, and 1508.26).

Comment No. 199: Evacuation Agreement Between USAF and Bixby Ranch

Since Bixby Ranch is located in Santa Barbara County, emergency procedures, including potential evacuations, are coordinated through the County as described in Section 3.11, Regional Environment. These procedures are considered adequate for reasonable protection of the public in the unlikely event an accident.

Comment No. 200: Health and Safety Risks to Future Bixby Ranch Residents

Health and safety risks to current populations levels and population levels in the reasonably foreseeable future are addressed in Section 4.11, Health and Safety, and were found to be low. Elevated levels of risks are based on hypothetical and development and need not be addressed in the EIS. See response to Comment No. 196.

Comment No. 201: Hazard Footprint and Launch Risks

[Response to Comment No. 201 To Be Developed]

Comment No. 202: Availability of Risk Assessment

The Draft EIS provided information at a level of detail necessary to understand the potential risks to public health and safety. The SLC-7 Risk Assessment was sent to Bixby Ranch Company on September 8, 1989 to provide additional requested information. As per Bixby Ranch Company request, additional comments on the Draft EIS were accepted for incorporation into the Final EIS after the designated end of the public comment period. Other references may be obtained through the Freedom of Information Act (5 USC 552) as consistent with CEQ Regulations (40 CFR Part 1506.6).

Comment No. 203: White Paper on Bixby Ranch Update

The White Paper is a preliminary land use planning document that provides summary-level risk information about a number of VAFB programs and speculates about hypothetical impacts from potential future land development to existing programs. The SLC-7 Risk Assessment was undertaken and provided to the public to address these risks specifically for SLC-7 and, as such, is a more recent and complete source of information.

Comment No. 204: Launch Risks

Launching Titan IV vehicles from SLC-7 at azimuths from 150 to 210 degrees presents an acceptable risk to public health and safety at current and reasonably foreseeable future levels of population. The Bixby White Paper addresses the potential for higher levels of risk based on a hypothetical development scenario. The Bixby White Paper does not identify unacceptable levels of risk to VAFB operations at current population levels.

Comment No. 205: Launch Risks

See response to Comment No. 204.

Comment No. 206: Property Acquisition Study

Launch-related hazards are at acceptable levels given current population of the Bixby Ranch and adjacent areas. The hypothetical Bixby Ranch development would increase population levels markedly. Activities at VAFB are integral components of the national defense. Because of this mission, the USAF must plan for future contingencies even if they may not be reasonably foreseeable as required by NEPA. Acquisition of real estate interests near South VAFB is one of several ways USAF can prevent development from encroaching and adversely impacting mission capabilities. The environmental impacts from potential real estate interest acquisition will be documented in a separate NEPA document (see response to Comment No. 183). The USAF has opposed high density development of the Bixby Ranch property since plans were originally discussed in 1981 and pursued three courses of action at that time to prevent such development. First, USAF objected to proposed plans at hearings before the Santa Barbara County Planning Commission, the Santa Barbara County Board of Supervisors, and the California Coastal Commission. Second, USAF met with Bixby Ranch Company representatives to determine if a resolution to the development issue was possible. And last, USAF began to internally consider acquisition of an interest in properties near South VAFB.

After the Bixby Ranch plan was withdrawn in 1983, USAF adopted the following approach to the potential land acquisition:

- Establish a planning budget in a future year's military construction program.
- Take no further action pending Bixby Ranch Company submission of a revised plan.
- Continue to oppose development plans through the local planning process.

This approach is still appropriate since Bixby Ranch Company has not submitted a development plan and, if such a plan were submitted, it would be subject to the local planning process as described to in response to Comment No. 196.

Comment No. 207: Mitigation Measures for Land Use

At present and reasonably foreseeable levels of population in areas near South VAFB, no mitigation measures are required. See response to Comment No. 197.

Comment No. 208: Mitigation Measures for Land Use

The independent action referred to in the Draft EIS is not a mitigation measure for operations from SLC-7, but, as mentioned in response to Comment No. 206, is one approach that USAF is utilizing to prevent potential encroachment near South VAFB. These properties would only become incompatible with VAFB's mission if they were significantly developed. They are currently compatible with launches from the proposed SLC-7. See response to Comment No. 197.

Comment No. 209: Consideration of Land Acquisition in Separate NEPA Document

Environmental impacts from the proposed action are fully discussed in Section 4.0, Environmental Consequences and Mitigation Measures. The document does not suggest that preliminary USAF activities to acquire lands near South VAFB are mitigation measures for land use impacts. See response to Comment No. 196.

Comment No. 210: Mitigation Measures for Land Use Impacts

The USAF needs to acquire interests in land near South VAFB should a plan for development occur and if the other measures outlined in response to Comment No. 193 prove not to be effective. See response to Comment No. 197.

Comment No. 211: Mitigation Measures for Land Use Impacts

The analyses to support the potential acquisition of real estate interests near South VAFB have not yet been undertaken. Acquiring incompatible real estate interests or changing launch azimuths would only be necessary if a plan for development were produced and approved and such development presented unacceptable risks to the general public. See response to Comment No. 197.

Comment No. 212: Hazard Footprint

See response to Comment No. 201.

Comment No. 213: Emergency Procedures for Offsite Populations

See response to Comment No. 198.

Comment No. 214: Evacuation of Lands Near South VAFB

At the current level of development and at reasonably foreseeable future levels, evacuation of these lands is not anticipated.

Comment No. 215: Acquisition of Lands Near South VAFB

The necessity to acquire real estate interests near South VAFB to prevent future encroachment of development will be determined under separate NEPA documentation as described in Section 4.13.1, Regional Impacts. See response to Comment No. 196.

Comment No. 216: Acquisition of Lands Near South VAFB

See response to Comment No. 196. The necessary real estate interests near South VAFB would be defined in a separate action.

Comment No. 217: Mitigation Measures

As summarized in Section 2.5, Summary of Mitigation Measures, mitigation measures are clearly described where warranted by environmental impacts. In the case of land use, impacts that require mitigation measures are not anticipated. Appropriate mitigation measures for land use impacts from base-wide activities may be discussed in the NEPA documentation for the acquisition of real estate interests near South VAFB. See response to Comment No. 196 regarding separability of these actions.

Comment No. 218: Mitigation Measures

See response to Comment No. 217. The legal decision cited in the comment refers to the necessity to consider the impacts to existing housing stocks as a direct result of the addition of military personnel into an area. The development of SLC-7 clearly presents a different set of considerations where impacts to potential future residents are hypothetical.

Comment No. 219: Launch Risks at VAFB and Cape Canaveral Air Force Station

Cape Canaveral Air Force Station (CCAFS) is discussed as an alternative in Section 2.2.2.1, Existing Government Sites. The CCAFS is eliminated from consideration in detail since, as indicated, safe launch azimuths are limited to between 35 and 120 degrees. These launch azimuths do not support the mission requirements as described in Section 1.3, Purpose and Need for the Proposed Action. VAFB currently supports polar orbits with acceptable levels of risk. These impacts are discussed in proportion to their importance per CEQ Regulations (Parts 1500.1, 1500.2, 1500.4, 1501.7, 1502.1, and 1508.26). The Bixby White Paper does not address existing levels of risk, or the additional increment of risk posed by launches from SLC-7. It discusses potential future additional risks from hypothetical development on lands adjacent to South VAFB.

Comment No. 220: Launch Risks at VAFB and Cape Canaveral Air Force Station

See response to Comment No. 219.

Comment No. 221: Selection of SLC-6

See response to Comment No. 139.

Comment No. 222: Selection of SLC-6

See response to Comment No. 139.

Comment No. 223: Supplemental Draft EIS

As noted in response to Comment No. 196, the acquisition of real estate interests near South VAFB is being analyzed under separate NEPA documentation since the potential actions are clearly separable. Since mitigation measures are not anticipated for land use and since new circumstances or information have not come to light, it is not necessary to prepare a supplement to the Draft EIS.

Comment No. 224: Gather and Evaluate New Information

As noted in Section 2.5, Summary of Mitigation Measures, USAF recognizes the necessity of continuing to gather information about potential launch-related impacts to biota through a monitoring program. As additional environmental information is obtained, USAF will consider it as per AFR 19-7 (Environmental Pollution Monitoring).

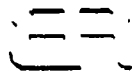
Comment No. 225: Draft EIS Supplement

As described in response to Comment No. 223, a supplemental Draft EIS will not be necessary to fulfill the requirements of NEPA.

LETTER 15

2-153

BIXBY RANCH COMPANY
a California Limited Partnership



Fred H. Bixby, Founder • 1875-1952

Kenneth C. Bornholdt
Senior Vice President
& General Counsel

October 6, 1989

Mr. Robert C. Mason, AICP
HQ SSD/DEV
P. O. Box 92960
Los Angeles, CA 90009-2960

Re: Risk Assessment Supplement to
Draft EIS for SLC-7 at
Vandenberg AFB (September 1989)

Dear Mr. Mason:

[226] We have reviewed the above-referenced document with the
SLC-7 Draft EIS and have concluded (i) that it does not support
the conclusions reached in the Draft EIS (e.g., see: pp. S-2,
2-69, 4-130) that Vandenberg AFB is the environmentally
[227] preferred site and all health and safety impacts are analyzed
therein, and (ii) that it does not in any way cure the defects
noted in Bixby's comment letter dated 8 September 1989. For
the reasons stated herein, when the Risk Assessment is read
together with the Draft EIS and the White Paper on Bixby Ranch
Update dated July 15, 1988 ("Bixby White Paper"), the Draft EIS
is clearly incomplete and inadequate for several reasons.

[228] The principal defect in the Draft EIS exists because the
Risk Assessment assumes in all the risk analyses contained
therein, that the Air Force launch policy employing LARA would
prohibit a launch where adverse wind direction and speed
conditions would result in debris falling in "undesirable"
(i.e., populated) areas (see: p.p. 2-13, 4-15 and 7-1).
Accordingly, the Risk Assessment calculated probabilities of
risk solely by analyzing the probability of error in the LARA
[229] computer program itself (see: p.9-2). Thus, the conclusion of
no significant adverse risks to populations on Bixby Ranch is
easily reached given the low probability of computer error in
LARA (see: p. S-7). However, none of that can be squared with
[230] the Bixby White Paper, and the Draft EIS is clearly flawed in
its failure to address this stark clash in two Air Force
documents.

BIXBY RANCH COMPANY

What the Air Force concluded in the Bixby White Paper is that because Bixby is directly downwind and down range of Vandenberg AFB most of the time due to prevailing unfavorable wind speeds and direction, that LARA would have permitted Titan launches under existing Air Force launch policy only 10% of the time when the Bixby property is developed (see: p. 10). Furthermore, the Air Force stated in the Bixby White Paper that being able to launch space vehicles only 10% of the time makes operations at Vandenberg AFB (including SLC-7) "inordinately expensive" and therefore makes acceptance of the risk of development on Bixby Ranch "untenable" (see: p. 10). Absent in the Draft EIS is any discussion of the economy of using Vandenberg AFB to launch space vehicles only 10% of the time over a developed Bixby Ranch, which could very well be

[231] significantly less than using an alternative site either on or off Vandenberg AFB, even though other cost factors for those sites may be higher. This omission constitutes a fatal flaw in the Draft EIS.

It is also significant to note that the evacuation procedures mentioned in the Risk Assessment do not apply to Bixby Ranch (see: p. 2-14), and, therefore, that the Air Force does not know at any point in time how many people there may be or where on the Bixby property for any given Titan launch. Accordingly, no accurate population count can be made for the Bixby property to input into LARA and meaningfully apply the

[232] Air Force launch policy and make a safe launch. Thus, the

[233] basic assumption used in the Risk Assessment for the Bixby property is totally invalid for lack of any population data.

In addition to these principal defects, we have the following comments concerning other inadequate and incomplete features of the Risk Assessment, which, in turn, render the Draft EIS which relies upon it likewise defective:

- [234] 1. There is no analysis done of the public risk from the launch of a Titan IV/Centaur in terms of casualty expectancy.
- [235] 2. What were the assumptions made concerning existing and future population densities surrounding Vandenberg AFB?
- [236] 3. It is unclear what the precise launch azimuths of SLC-7 will be, the launch danger area (the Impact Limit Line) or hazard zone LARA applies to, or what specific property ownerships are within these areas.

BIXBY RANCH COMPANY

[237] 4. Sonic boom effect was not addressed.

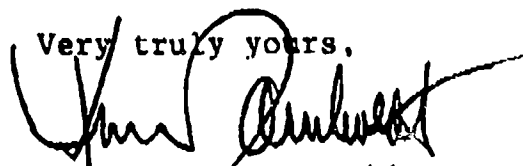
[238] 5. We note that the Risk Assessment provided to us is dated "September 1989", while the Draft EIS released in July 1989 referred to a risk assessment made prior to July 1989.

[239] The last point evokes the question whether the Draft EIS was based on an earlier version of the Risk Assessment than that provided to us by the Air Force's letter dated 8 September 1989. If so, all commenters on the Draft EIS should be provided all changes that were made in the Risk Assessment subsequent to the version considered in the Draft EIS, an explanation of the reasons for those changes, and an additional time period within which to comment thereon.

In conclusion, we believe substantial analytical work and revisions to the Draft EIS need to be undertaken to comply with NEPA and the regulations promulgated thereunder.

We appreciate your cooperation in giving us until October 9 to comment on the Risk Assessment and your commitment to have these comments and your responses made part of the Final EIS.

Very truly yours,



Kenneth C. Bornholdt

KCB/vja

RESPONSE TO LETTER 15

Received From: Bixby Ranch Company (October 6, 1989)
Kenneth C. Bornholdt, Senior Vice President and General Counsel

Comment No. 226: VAFB as Environmentally Preferred Site

The Draft EIS does not come to the conclusion that VAFB is the environmentally preferred site. Text on page S-2 indicates that the development of Titan IV/Centaur launch facilities at South VAFB would present the most reasonable course of action, according to mission requirements, technical needs and cost, engineering, and design considerations. On page S-9, the Draft EIS identifies SLC-6 as the alternative with the fewest environmental impacts among the four alternative sites considered in detail.

Comment No. 227: Comments From Bixby Ranch Company Dated September 8, 1989

Comments on the Draft EIS received from Bixby Ranch Company dated September 8, 1989 are fully addressed in this Final EIS.

Comment No. 228: Basis for Analyses in Risk Assessment

The assessment of various kinds of risks to public health and safety are based on the use of the LARA model as well as many other assumptions detailed in the Risk Assessment (Environmental Solutions, Inc. 1989). The utilization of the LARA model in determining potential risks to public health and safety is limited to the launch anomaly event and the burning debris pathway only. Risks from normal launches and operations utilize other modeling assumptions.

Comment No. 229: Calculations of Probabilities of Risk

As noted above, the use of LARA and its associated probability of error is a modeling assumption only for risks arising from a launch anomaly. The calculation of probabilities for other risks, such as those arising from normal launches and operations events, are based on other operational assumptions. For example, the discussion of the Particulate and Gas

Dispersion Pathway (Risk Assessment, Section 4.0) is not based on LARA error at all, but on worst-case events and atmospheric conditions. Conclusions contained in the Draft EIS are based upon various assumptions and conditions, many of which are not related to LARA.

Comment No. 230: Bixby White Paper

As noted in response to Comment No. 203, the Bixby White Paper is a land use planning document that evaluates the potential base-wide impacts from potential future population encroachment near South VAFB. As such, it addresses different issues than the SLC-7 Draft EIS.

Comment No. 231: Potential Operation Restrictions on SLC-7

The Bixby White Paper indicates that 90 percent of all Titan launches in the 1990s (including those from SLC-4 East and West as well as from SLC-7) would pose unacceptable risks if areas near South VAFB were developed. The conclusion reached for these three launch sites does not translate into a 90 percent level of unacceptable launch conditions from SLC-7 since it is located to the west of SLC-4 and would support different missions. In addition, as noted in response to Comment No. 204, risks to public health and safety are acceptable at current and reasonably foreseeable future levels of population.

Comment No. 232: Evacuation Procedures

As noted in response to Comment No. 199, evacuation procedures are coordinated by Santa Barbara County.

Comment No. 233: Input into the LARA Model

Since the LARA model is run in a real-time mode for specific launches, the population estimates used as input would reflect levels at that point in time. The LARA model runs would utilize conservative population estimates, taking into consideration evacuation measures. Analyses contained in the Risk Assessment are valid since they were not dependent on specific LARA model runs or population estimates, but rather on the potential error contained in LARA calculations.

Comment No. 234: Casualty Expectancy

The analysis of risk to public health and safety in the Risk Assessment is presented in an easily understandable form in its Table S.1, Summary of Relative Potential Risk SLC-7, Operations, where risks are shown as low, moderate, and high (relative to each other). It is not necessary to address risks in terms of casualty expectancy.

Comment No. 235: Assumptions on Population Densities

The methodology used in the Risk Assessment did not require the calculation of population densities for areas near VAFB. The methodology was based on calculating impact conditions at the area of concern and comparing those impact conditions to hazard criteria. For example, for the Particulate and Gas Dispersion Analyses (Risk Assessment, Section 4.0), doses were calculated for various events downwind distances for areas such as Bixby Ranch. These doses were then compared to exposure limits to determine if limits were violated. No such limits were violated for areas outside of VAFB.

Comment No. 236: Launch Azimuths

Precise launch azimuths are mission-specific, and were not known at the time of the preparation of the Draft or Final EIS. As a consequence, specific hazard zones or property ownerships are not known. The analysis contained in the Risk Assessment was not based on specific launch azimuths, but assumes worst-case conditions for potential impact areas.

Comment No. 237: Sonic Booms

The potential impacts of sonic booms are addressed in the Draft EIS Section 4.7, Noise. It is not necessary to duplicate this analysis in the Risk Assessment.

Comment No. 238: Risk Assessment Version

Publication of the Risk Assessment was delayed until September 1989. Changes to references to the Risk Assessment made in the Draft EIS are noted in Section 3.0 of this Final EIS.

Comment No. 239: Risk Assessment Version

The Risk Assessment dated September 1989 is the document on which the Draft EIS was based. As noted in response to Comment No. 238, changes to references to the Risk Assessment made in the Draft EIS are noted in Section 3.0 of the Final EIS.

LETTER 16

2-160

WRITTEN STATEMENT

Sept. 5, 1989

UNITED STATES AIR FORCE
PROPOSED TITAN IV/CENTAUR SPACE LAUNCH COMPLEX 7
VANDENBERG AIR FORCE BASE, CALIFORNIA

- [240] 1. We agree that there are sites in this general area/vicinity.
- [241] 2. The Air Force Base has not authorized testing of the sites, nor,
has it chosen a site for this project.
- [242] 3. Phase I is all that was conducted in this area. There was excavation
done by the Core of Engineers, but not in any archaeological form.
- [243] 4. Some of these sites have burials, we do not know which sites have the
burials because there has been no testing, and there is a need for
this testing.
- [244] 5. No Phase II was done in this area.
- [245] You may suggest a time and place for a meeting with regard to the
above issues at any time; however, just give us prior notification.

Submitted by: The Tribal Elders Council

s/ Manuel Armenta
Manuel Armenta, Chairman, Tribal Elders Council
s/ David D. Dominguez
David D. Dominguez, Chairman, Santa Ynez Band of
Mission Indians

RESPONSE TO LETTER 16

Received From: Tribal Elders Council - Manuel Armenta, Chairman and David D. Dominguez, Chairman, Santa Ynez Band of Mission Indians

Comment No. 240: Presence of Cultural Resources

Comment noted. Native American monitors were present during field inventories and site testing.

Comment No. 241: Status of Site Testing

Section 1.5.2.4, Status of Proposed Action, indicates that a surface inventory for cultural resources has been completed for the proposed and alternative sites. Neither NRHP eligibility nor effects testing for sites identified in the inventory has occurred. The site chosen for development of SLC-7 will be determined after review of the Final EIS and will be published in the Record of Decision (ROD). At that time, testing would be performed.

Comment No. 242: Status of Site Testing

Limited subsurface testing for NRHP eligibility and effects has been performed for some SLC-7 associated areas in support of geotechnical investigations undertaken by the U.S. Army Corps of Engineers. Consultations with California SHPO regarding potential impacts to cultural resources resulted in "No Effects" opinions.

Comment No. 243: Status of Site Testing

The information generated during cultural resources inventories, as described in Section 3.9, Cultural Resources, does not support conclusions about either the presence or absence of burial sites within the cultural resources study area. Prior to site construction, subsurface testing for cultural resources and construction monitoring would be conducted as described in Section 1.5.2.4, Status of Proposed Action.

Comment No. 244: Phase II

Comment noted.

Comment No. 245: Potential Cultural Resources Meeting

Local Native Americans will participate in subsurface testing programs as consistent with the regulations described in Section 1.5.2.4, Status of the Proposed Action. Notification will be given prior to SLC-7 related meetings with Native American peoples.

LETTER 17

2-163

WRITTEN STATEMENT

UNITED STATES AIR FORCE PROPOSED TITAN IV/CENTAUR SPACE LAUNCH COMPLEX 7 VANDENBERG AIR FORCE BASE, CALIFORNIA

My statement about the proposed Titan IV Centaur launch site project centers around two subjects:

[246] 1. Can the tremendous thrust of the Titan IV Centaur upon launch cause movement in the earthquake faults that are in the area? Will an earthquake and or liquifaction occur as a result of the seismic vibrations induced upon the earth surface?

[247] 2. Will the U.S. Air Force be responsible for property damages caused by the launch pressure, sounds, and vibrations? With the increase in thrust of the Titan IV Centaur the potential for broken windows, cracked concrete, broken dishes and panic among people is increased also.

Submitted By: Maurice "Greg" Cooper
805 N. Seventh st.
Lompoc, Ca. 93436

Please give to Air Force representative or mail to: HQ Space System Division/DEV, Attention: Mr. John Edwards, Post Office Box 92960, Los Angeles, CA 90009-2960. Written statements must be received no later than September 11, 1989.

RESPONSE TO LETTER 17

Received From: Maurice "Greg" Cooper - Lompoc, California

Comment No. 246: Launch-Related Earthquakes

An earthquake is caused by the abrupt release of slowly-accumulated strain on a fault system at depth. Although the thrust of the Titan IV/Centaur seems tremendous to us, the vibrations caused by that thrust would be insufficient to cause fault rupture; therefore, there would be no launch-related earthquake.

Comment No. 247: Responsibility for Launch-related Property Damages

The Risk Assessment performed for SLC-7 (Environmental Solutions, Inc. 1989) analyzed the likelihood of property damages such as structural damage and window breakage and found the risks to be small for areas off VAFB. USAF would be responsible for property damages caused by launch pressures, sounds, and vibrations that result from launches at SLC-7 as consistent with AFR 112-1, Claims and Tort Litigation. Claims of this type are processed by the VAFB legal affairs office (1STRAD/JAD).

8/3/89
4049 St. Andrews
C.T.
Lompoc Ca 93436

Dear Mr. Edwards

Thank you for asking for
comments (SB News Press 8/3/89) on
the proposed Shuttle complex at Vandenberg.

[248] If water is the only real hassle;
(ie, using existing H₂O basins) then I'm
sure the government could also allot money
to convert sea water to drinking water to
use at the shuttle site. Then there would
be no problems. (I say that with reservation)

Space exploration sounds exciting
if done peacefully, and for the good of
mankind.

Respectfully
Nancy Flanders

RESPONSE TO LETTER 18

Received From: Nancy Flanders - Lompoc, California

Comment No. 248: Desalinization Plant

See response to Comment No. 83.

WRITTEN STATEMENT

U. S. Air Force Proposed Titan IV/Centaur Launch Complex 7
Vandenberg Air Force Base, California

9/1/89

Dear Sirs: I support the construction of this project. It will create new jobs both in its construction and in its operations. It is a progressive step in the "missile country" mission established for our nation at VAFB. The local economy is linked in both attitude and economically to the base's objectives.

[249] There was only one speaker at the public EIS hearing in Santa Barbara on August 31. I am not fully informed on the Chumash "Western Gate" concerns, but I believe they will be outweighed by national defense concerns. However, I believe that some sensitivity should be expressed in this area. One idea I've had would be to dedicate VAFB property south of SLC-7 as a "cultural" reserve. This dedication could serve the Air Force by establishing a buffer strip of land on the south base yet appease the native American concerns. Additionally, assistance in developing a local indian heritage center (at Jalama Beach??) could be a focal point for all archaeological fundings on the base.

Submitted by

Name: Lawrence E. Liles, Business ManagerAddress: Local Union 413, I.B.E.W., 415 Chapala Street, Santa Barbara, CA 93101

Submit to: Attn Mr. John Edwards
HQ SSD/DEV
P. O. Box 92960

Los Angeles, CA 90009-2960

Comments must be received no later than Sept. 11, 1989

RESPONSE TO LETTER 19

Received From: Lawrence E. Liles - Santa Barbara, California

Comment No. 249: Mitigation Measures for Cultural Resources Impacts

As noted in Section 4.9.4, Mitigation Measures, the mitigation measures for cultural resources impacts associated with SLC-7 will be developed in consultation with the California State Historic Preservation Office (SHPO). They will be consistent with applicable laws and regulations, including the National Historic Preservation Act of 1966, as amended, and the President's Advisory Council on Historic Preservation regulations for the Protection of Historic Properties (36 CFR Part 800) which encourages participation by local governments, Native American tribes, and the public. Within this context, comments are particularly sought from the Elders Council of the Santa Ynez Reservation, the Coastal Band of the Chumash Nation, and other interested parties to ensure full discussion of cultural resources mitigation measures. In addition, it is recommended that a National Register of Historic Places district made up of South VAFB be created to provide a more comprehensive treatment of cultural resources in the area. Since cultural material from VAFB is repositied at the University California at Santa Barbara, the scientific community would also be involved in discussions regarding the development of a heritage center if it were to contain cultural materials.

LETTER 20

John J. Markon

2-169

1532 West North Avenue

Lompoc, California 93436

October 3, 1989

Mr. John Edwards, Air Force Space Systems
P.O. Box 92960 WPC
Los Angeles, Ca. 90009

Dear Mr. Edwards:

In a situation where Lompoc is on the verge of water rationing, the Air Force would further exacerbate the shortage with up to 700 additional acre feet expended annually, during SLC 7 construction. According to the draft EIR, the 1500 new construction workers and families would use over 300 acre feet annually. The construction site would use almost 400 acre feet more.

Lompoc's problem is basically one of uncontrolled development, where the problems of water shortage, school crisis and traffic congestion are only mitigated after the fact. The reality being that the resultant mitigation is only lip service and our town is now in trouble in all three of these areas.

[250] The time has come for any future development to solve the concomitant problems BEFORE and not after the fact. If the Air Force would desire acceptance by Lompoc residents of this extreme intrusion into our mutual water supply, let them first do something to improve the water supply BEFORE any construction is started.

Praise by local business is accorded the nine million dollar boost the construction would give the local economy. Residents, however, do not benefit and only suffer from the mess and the overstressing of Lompoc's resources. Is the greed for business and commercial profit worth the destruction of our good life style? As a resident who loves this valley, I say no.

[251] The Air Force has no need to cater to local business and should build only where it is appropriate and not a stress upon local resources. Failing to first find a way to solve our water problem, the Air Force should build instead in Florida, where fortunately the water tables are better. SLC-7 in Lompoc would only further contribute to the environmental disasters caused by Lompoc's development.

Sincerely yours

John J. Markon
John J. Markon

cc: Senator Cranston
Congressman Lagomarsino

RESPONSE TO LETTER 20

Received From: John J. Markon - Lompoc, California

Comment No. 250: Water Supply Improvement

See response to Comment No. 83.

Comment No. 251: Desirability of Florida as SLC-7 Site

As described in Section 2.2.2.1, Existing Government Sites, Cape Canaveral Air Force Station/Cape Kennedy was evaluated as an alternative to the proposed action (p. 2-36). This alternative was rejected since the Titan IV/Centaur cannot safely achieve near-polar orbits and satisfy mission objectives from this location.

WRITTEN STATEMENT

UNITED STATES AIR FORCE
PROPOSED TITAN IV/CENTAUR SPACE LAUNCH COMPLEX 7
VANDENBERG AIR FORCE BASE, CALIFORNIA

[252]

I would like to state that I am
all for SLG 7. And giving all the info
the Air Force has had to go through to come
up with this plan, alternatives etc.,
I don't think we should waste any time
in getting started. I'm sure there are items
on national security you cannot discuss with the
public and have your reasons for not using
SLG 6 (which I'm opposed to) or modify SLG
4 west. As a Union Pipe Fitter Local #14 S.B.,
my livelihood rest on the base moving forward
into the future and as a resident of Lompoc
I look forward to many years here.

Good Luck.

Thanks

Michael E. McClave

Submitted By:

Michael E. McClave
620 N. Lakeside
Lompoc, CA 93436

Please give to Air Force representative or mail to: HQ Space System
Division/DEV, Attention: Mr. John Edwards, Post Office Box 92960,
Los Angeles, CA 90009-2960. Written statements must be received
no later than September 11, 1989.

RESPONSE TO LETTER 21

Received From: Michael E. McClure - Lompoc, California

Comment No. 252: Construct SLC-7

Comment noted.

LETTER 22

2-173

Mr. J.C. Picciuolo
4185 Vanguard Drive
Lompoc, CA 93436

Department of the Air Force
Headquarters Space Systems Division/DEV
Attn: Mr. John Edwards
Post Office Box 92960
Los Angeles, CA 90009-2960

31 August 1989

Dear Sir:

I request that the following be considered as part of the formal public comments on your Draft EIS for Space Launch Complex 7 at Vandenberg Air Force Base.

I am concerned that the Draft EIS does not adequately address the impact on water resources in the region. Specifically, I have identified a possible misstatement in the draft which may require correction or clarification after appropriate research has been done by your staff.

On page 3-22 of your Draft (Vol. I), where the Lompoc Terrace ground water basin is discussed under the section heading Ground Water, the following sentences appear:

"These distinct boundaries keep the basin almost entirely within South VAFB" -and- "Presently, South VAFB is the only user of water from the basin."

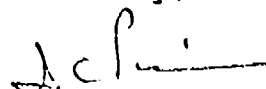
[253] Your implication seems to be that water drawn from the Lompoc Terrace basin by VAFB does not affect other ground water resources in the area. A study dated 1963 is cited by you as the authority for this information.

I would like to draw your attention to a much more current study, The Tenth Annual Engineering Survey Report on Water Supply Conditions of the Santa Ynez River Water Conservation District 1987-1988, dated June 2, 1988, produced by Stetson Engineers Inc. On page 24 of this study, the following sentence appears:

"The Lompoc Plain basin is in direct hydrological continuity with the Lompoc Upland and Lompoc Terrace basins."

Your EIS should incorporate the most current information available.

Sincerely,



RESPONSE TO LETTER 22

Received From: J.C. Picciuolo - Lompoc, California

Comment No. 253: Impacts to Lompoc Terrace Ground Water Basin

The approximate physical boundary of the Lompoc Terrace aquifer (i.e., almost entirely within South VAFB) is supplied to emphasize that VAFB is the only organization that directly withdraws water supplies from the Lompoc Terrace aquifer. The Stetson report (Stetson 1988) does indicate that there is hydrological continuity between the Lompoc Plain Basin and the Lompoc Terrace Basin. In addition, it indicates that current test drilling being undertaken by the U.S. Geological Survey may "revise the present understanding of the subsurface geology" (Stetson 1989).

Additional detail regarding the hydrologic relationships between the the Lompoc Plain, Lompoc Terrace, and Lompoc Upland aquifers is provided in a 1982 analysis by Earth Sciences Associates (Earth Sciences Associates 1982). This detailed analysis also indicates the hydrological continuity between the three aquifers. The report indicates that ground water gradients are toward the Lompoc Plain from both of the other aquifers. The Lompoc Terrace and Lompoc Uplands aquifers lose, respectively, approximately 400 and 1,300 acre-feet per year of their water supplies to the Lompoc Plain aquifer (Earth Sciences Associates 1982). It is anticipated that, with the relatively large storage capacity of the Lompoc Terrace aquifer (approximately 60,000 acre-feet) and the relatively small draw-down (approximately 380 acre-feet per year for construction and approximately 260 acre-feet per year during operations), the hydrological continuity between the Lompoc Terrace aquifer and the Lompoc Plain aquifer would not be disturbed in the foreseeable future. As described in response to Comment No. 249, construction demand for water would be significantly reduced.

September 8, 1989 LETTER 23

2-175

Gentlepeople:

[254] Please take SLC 6 out of mothballs, and do not do #7 -- I was unable to attend the August 30 meeting in Lompoc -- #7 will cause too much air pollution from new autos for the people who will be hired for the work -- I believe I recall it will be a 4-year period. In addition, our environment cannot tolerate that much water loss for construction and operation. The land will be even more violated than it is now.

[255] This is something that I really do not believe we need to spend all that money on -- and where will it come from, with Mr. Bush's "read my lips" lines, and now his "drug war"? *It is simply Spent - Spent - Spent - we have enough spent money -*

[256] NO -- please -- go to SLC6, not 7. Thank you,

Mary Gaines Read

MS. MARY READ
610 EAST PINE AVE 31
LOMPOC, CA 93436

• JUNE 1990

First Land Run, 1889
Territory Established, 1890
Cherokee Strip Run, 1890

HQ SSD/DEV, Attn. Mr. John Edwards
P.O. Box 92960
Los Angeles, CA 90009-2960

USA
13

Settling of Oklahoma



Mary Gaines Read
610 East Pine Ave., #31
Lompoc, CA 93436

RESPONSE TO LETTER 23

Received From: Mary Gaines Read

Comment No. 254: Air Pollution Control by Automobile Emissions for SLC-7
as Opposed to SLC-6

As discussed in Section 4.12.1, Regional Impacts, there would be 150 fewer employees during the construction phase for the reconfiguration of SLC-6 than for the development of the proposed Cypress Ridge site or the two other alternative sites.

As stated in Section 4.5.2.2, the selection of SLC-6 would avoid most of the construction-related air quality impacts associated with the undeveloped sites, including the additional automobile emissions.

Comment No. 255: Ground Water Use

See response to Comment Nos. 193, 194 and 83.

Comment No. 256: Selection of SLC-6

See response to Comment No. 139.

LETTER 24

2-177

WRITTEN STATEMENT

UNITED STATES AIR FORCE PROPOSED TITAN IV/CENTAUR SPACE LAUNCH COMPLEX 7 VANDENBERG AIR FORCE BASE, CALIFORNIA

7 September 1989

In a meeting at Vandenberg AFB on 23 August 1989, B. Gen. Honeywill was asked by a civilian range safety engineer if it was the Air Force's intent to "close the door" on SLC-6 by its selection of Cypress Ridge as the SLC-7 site. The ensuing discussion revealed that hazardous operations at the Cypress Ridge site would cause the shutdown and evacuation of SLC-6. The WSMC safety engineer present confirmed that certain operations at Cypress Ridge would "interdict" SLC-6 operations.

The DEIS addresses the potential for closure of Jalama beach but does not identify the potential impact on SLC-6.

[257] If NASA intends to use SLC-6 for future Shuttle or Shuttle C operations, should not the EIS identify the impact the Cypress Ridge site would have on their operations and schedule?

Submitted By: Donald D. Smith
245-A Burton Mesa Blvd.
Lompoc, California 93436

Please give to Air Force representative or mail to: HQ Space System Division/DEV, Attention: Mr. John Edwards, Post Office Box 92960, Los Angeles, CA 90009-2960. Written statements must be received no later than September 11, 1989.

RESPONSE TO LETTER 24

Received From: Donald D. Smith - Lompoc, California

Comment No. 257: Potential Impacts to SLC-6

There are no current plans for the utilization of SLC-6 for either the Space Shuttle or Shuttle C. If SLC-6 were to be utilized in the future, operations there would be coordinated with those at SLC-7 as per USAF safety regulations. Since the use of SLC-6 is speculative at this point in time, it is not appropriate to address in the Draft or Final EIS. See response to Comment No. 139.

2.2 HEARING COMMENTS AND RESPONSES

The CEQ regulations require that diligent efforts be made to involve the public in preparing and implementing NEPA procedures (40 CFR Part 1506.6). These regulations require that a public hearing be held to solicit public comment on the Draft EIS if there is substantial environmental controversy concerning the proposed action. In accordance with these requirements, public hearings were held beginning at 7:00 p.m. in the Grossman Gallery of the Lompoc Public Library, in Lompoc, California, and beginning at 7:00 p.m. in the Santa Barbara County Superintendent of Schools Auditorium in Santa Barbara, California, on August 30 and 31, respectively.

This section contains the transcripts of the public hearings as submitted by the Certified Shorthand Reporter. The comments contained in the public hearing transcripts are numbered consecutively, and the responses are keyed to those numbers. This section is structured so that each transcript is followed by the responses to the comments contained therein. For ease of reference, comments have been excerpted from the texts of the transcripts and are reprinted next to their responses. Where a comment warrants changes or additions to the text of the Draft EIS, it is so noted in the response and the additional material is contained in Chapter 3.0 (Addenda and Errata to the Draft EIS) in the Final EIS.

**2.2.1 LOMPOC, CALIFORNIA PUBLIC HEARING TRANSCRIPT
AND RESPONSES TO COMMENTS**

ORIGINAL

PUBLIC HEARING
DEPARTMENT OF THE AIR FORCE
SYSTEMS COMMAND

DRAFT ENVIRONMENTAL IMPACT
STATEMENT FOR PROPOSED
TITAN IV/CENTAUR SPACE
LAUNCH COMPLEX 7
VANDENBERG AIR FORCE BASE,
CALIFORNIA

NO.

REPORTER'S TRANSCRIPT OF PROCEEDINGS

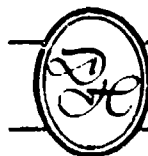
Wednesday, August 30, 1989

7:00 P.M.

Lompoc, California

REPORTED BY:
ELLEN Q. BRESSI
CSR No. 7184

CERTIFIED
ORIGINAL



Devine-Hall & Associates

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1 PUBLIC HEARING
2 DEPARTMENT OF THE AIR FORCE
3 SYSTEMS COMMAND
4 WEDNESDAY, AUGUST 30, 1989
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9 DRAFT ENVIRONMENTAL IMPACT STATEMENT FOR
10 PROPOSED TITAN IV/CENTAUR SPACE LAUNCH COMPLEX 7
11 VANDENBERG AIR FORCE BASE, CALIFORNIA
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18 GROSSMAN GALLERY, LOMPOC PUBLIC LIBRARY
19 501 EAST NORTH AVENUE
20 LOMPOC, CALIFORNIA
21 7:00 P.M.
22
23

24 REPORTER BY:
25 ELLEN Q. BRESSI
CSR. No. 7184

1 APPEARANCES:

2

3

COLONEL MIKE McSHANE, Military Trial
Judge, designated as presiding officer by
the Office of the Judge Advocate General in
Washington

5

6

LIEUTENANT GENE BRANCH, Administrative
officer

7

8

COLONEL MIKE HAYNER, Western Space
and Missile Center at Vandenberg Air Force
Base; Space Launch Complex 7 Program Manager

9

10

11

COLONEL BILL LEOHARD, Design,
construction and environmental analysis of
Systems Command facilities and programs at
Vandenberg Air Force Base

12

13

JOHN EDWARDS, Manager of the
environmental analysis for Space Launch
Complex 7

14

15

DAN EVANS, Environmental Solutions,
Incorporated, Air Force contractor conducting
the environmental analysis for Space Launch
Complex 7

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1 PUBLIC SPEAKERS:

2 HOWARD E. GRANTZ
3 JAMES SPELLMAN, JR.
4 W.S. MULLINS
5 LEROY SCOLARI
6 JEREMY GRAVES
7 ELAINE M. SCHNEIDER

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1 LOMPOC, CALIFORNIA

2 WEDNESDAY, AUGUST 30, 1989

3 7:05 P.M.

4 -ooo-

5
6 COL. McSHANE: Good evening, ladies and
7 gentlemen. My name is Mike McShane. I'm a
8 full-time Military Trial Judge for Air Force
9 Courts Marshall. I've been designated by the
10 office of the Judge Advocate General in Washington
11 as Presiding Officer for tonight's public hearing
12 upon the Draft Environmental Impact Statement.

13 I want to start out by advising you
14 that the National Environmental Policy Act and
15 Implementing Regulations require federal agencies to
16 carefully analyze the potential environmental impacts
17 of proposed actions, and to use those analyses in
18 arriving at decisions or recommendations on whether
19 and how to proceed with those actions.

20 The Air Force has prepared and
21 distributed, in accordance with applicable
22 regulations, a Draft Environmental Impact statement
23 addressing a proposal for the construction and
24 operation of a Titan IV/Centaur Space Launch Complex
25 in support of the Department of Defense Space

DEVINE-HALL & ASSOCIATES

1 Program. That's what we're going to be talking about
2 here tonight.

3 I am not here as an expert on this
4 proposal, nor have I had any connection with its
5 development. I'm not here to act as legal advisor
6 as to the Air Force Experts who will address this
7 proposal. My purpose is simply to insure that we
8 have a fair, orderly hearing, and that all who
9 wish to be heard have a fair chance to speak.

10 Let me just take a moment to explain
11 how tonight's hearing will proceed. This isn't going
12 to be a debate nor a referendum or vote upon the
13 proposal itself. There will be no demonstrations,
14 nor should you signify your agreement or disagreement
15 with a speaker's position by applause or other
16 expressions of approval or disapproval. That adds
17 nothing to the hearing record and simply wastes your
18 valuable time. In fact, this may be the only time
19 available for your personal input to our government's
20 decision making process.

21 What this informal hearing is
22 intended to provide is a public forum for two-way
23 communications, with a view to improvement of the
24 overall decision making process. You notice I
25 said "two-way communications." Part 1 of that

1 calls for you to listen carefully to what the Air
2 Force experts say as you are briefed on the
3 proposal and its anticipated environmental
4 consequences.

5 After the briefing you'll be able
6 to ask questions to clarify, in your minds, any
7 points made in the briefing or in the Draft
8 Environmental Impact statement. Part 2 of this
9 process is for you to tell the Air Force experts
10 what you think to give Air Force decision makers
11 the benefit of your knowledge of the local area
12 affected by the proposal and any environmental
13 hazards you perceive.

14 I'd like to emphasize that this is
15 a proposal and nothing that's already been
16 decided, approved or funded. Our hearing isn't
17 for the purpose of justifying anything, but rather
18 to identify and assess pertinent impacts,
19 including your personal perspective of those
20 impacts.

21 If you have not already done so,
22 please fill out one of the registration cards that
23 we have back there. You may indicate on the
24 registration card if you would like to ask a
25 question or make a statement.

1 We'll have a recess later on, and
2 after that recess we'll collect those cards and I
3 will recognize members of the public for the
4 purpose of putting a question to these Air Force
5 experts that we have, or making a statement about
6 the proposal. Don't be shy or hesitant to ask a
7 question or make a statement. This is an informal
8 hearing and there are no dumb questions.

9 I want to help insure that all who
10 wish to speak have a fair chance to be heard, so
11 please help me enforce the following ground rules:

12 First, only speak after I recognize
13 you and please address your remarks to me.

14 Second, speak slowly and clearly,
15 starting out with your full name, your
16 address and the capacity in which you
17 appear. That is, as a public official,
18 a designated representative of a private
19 association, or as a person speaking
20 solely in his or her individual capacity.

21 We have a court reporter here,
22 Mrs. Ellen Bressi, and she has to make
23 a verbatim record of these proceedings.
24 So please speak slowly and clearly so
25 she can do her job properly.

1 Third, if you have any questions
2 for the panel, ask the questions one at
3 a time. I will allow a reasonable number
4 of questions.

5 Fourth, as put out in the public
6 notice, individuals will be allowed five
7 minutes to speak, and those representing
8 groups will be allowed 10 minutes to speak,
9 and elected public officials will be
10 allowed 10 minutes to speak. If there's
11 time remaining, after everyone has had an
12 opportunity to speak, I can recall anybody
13 who wishes to make additional comments.

14 Fifth, honor any requests from
15 me that you cease speaking.

16 Sixth, do not speak while another
17 person is speaking. Only one person will
18 be recognized at a time.

19 And finally, I'm sure that this
20 is a no smoking area, so everyone will
21 appreciate your cooperation with that
22 rule.

23 As we go along here, it is possible
24 that there will be questions that these Air Force
25 representatives will be unable to answer. That could

1 occur for one or two reasons: First, although
2 there's a good deal of expertise assembled here, they
3 will not attempt to answer questions tonight unless
4 they are confident they can do so accurately. And
5 second, there may be questions that have national
6 security implications and these must be reviewed
7 further before answers are provided. If these should
8 occur and the question is relevant, I can assure you
9 it will be addressed in the final document and all of
10 you may request copies of that final document.

11 If we run out of time before
12 everyone gets to speak, you are invited to fill
13 out a written statement. I think those are
14 available there in the back of the room. You will
15 note that the statements can be submitted at any
16 time prior to the 11 September 1989, by mailing
17 them to the address which is listed on that
18 written statement.

19 Regardless of whether you put your
20 statement on the record tonight or mail it in
21 later, it will be carefully considered and made
22 part of the record of these proceedings. It will
23 have equal weight and will receive the same
24 careful consideration, whether it's made during
25 tonight's hearing or afterward.

1 I want to thank everybody who's
2 turned out here tonight. Your presence is
3 commendable in that it reflects a great interest
4 in your community and in those things that are
5 important to it. Let me assure you that your
6 interest is the primary purpose for us being here.

7 It's now my pleasure to introduce
8 Colonel Leohnard who will brief tonight's
9 proposal.

10 COL. LEOHWARD: Thank you, Colonel McShane.

11 As mentioned, I'm Bill Leohnard and
12 I'm the Director of Acquisition Civil Engineering
13 at Space Systems Division. My Directorate is
14 responsible for the design, construction, and
15 environmental analysis of Space Systems Command
16 facilities and projects constructed at Vandenberg
17 Air Force Base. And this includes the project for
18 which we're here this evening, the proposed space
19 Complex 7 for the Titan IV/Centaur space launch
20 vehicle.

21 Before I go any further, I'd like to
22 introduce the rest of the people at the head table.
23 First is Lieutenant Branch who's going to be acting
24 as our administrative officer this evening. To his
25 right is Colonel Mike Hayner who is with the Western

1 Space and Missile Center at Vandenberg Air Force Base
2 and is the Space Launch Complex 7 Program Manager.
3 To his right is Mr. John Edwards, a member of my
4 staff and the manager of the environmental analysis
5 for the Space Launch Complex 7. And to his right is
6 Mr. Dan Evans, representing Environmental Solutions
7 Incorporated, the Air Force contractor conducting the
8 environmental analysis for this proposed contract.

9 We will try to answer questions you
10 may have about the Environmental Impact Analysis
11 Process, the proposed action, or the Draft EIS,
12 but if questions become too technical, we don't
13 know the answers, or time is limited, let me
14 assure you they will be addressed fully in our
15 Final Environmental Impact Statement.

16 (Slide Change.)

17 COL. LEOHWARD: I will now explain the
18 Environmental Impact Analysis Process and how it
19 is conducted, and give you an overview of the
20 proposed action and the general findings of that
21 Draft EIS.

22 The National Environmental Policy
23 Acts, or NEPA, is implemented by the President's
24 Council on Environmental Quality Regulations.
25 NEPA requires that the federal agencies analyze

1 potential environmental impacts of a proposed
2 project and carefully consider alternatives to
3 the proposed project, including the no-action
4 alternative. These analyses are then used to
5 make decisions and recommendations on whether and
6 how to proceed with the project.

7 As shown on the screen, the
8 Environmental Impact Analysis Process is started
9 when the Air Force project proponent requests
10 environmental impact analysis from Air Force
11 environmental planners. The project proponents do
12 this at an early stage in project planning to
13 determine the extent of the environmental
14 documentation needed, whether it be a Categorical
15 Exclusion, Environmental Assessment or an
16 Environmental Impact Statement.

17 The regulations of the President's
18 Council on Environmental Quality allow Categorical
19 Exclusions for classes of action that do not
20 individually or cumulatively affect the environment.
21 Therefore, these actions require neither
22 Environmental Assessment nor an Environmental Impact
23 Statement.

24 Early in the analysis process, we
25 determined that this space launch complex did not

1 qualify for a Categorical Exclusion.

2 The next step in the EIAP is to
3 determine whether a project needs an Environmental
4 Assessment or a more extensive Environmental
5 Impact Statement. If it appears that the project
6 will not have any significant impacts, the
7 environmental planners will elect to proceed with
8 an Environmental Assessment.

9 In early 1988 when we were planning
10 the proposed action, it was determined that due to
11 the potential for significant impacts, we would
12 proceed with an Environmental Impact Statement.

13 The completion of this process then
14 is the decision made by the Air Force about
15 whether to proceed with the proposed action, a
16 modification of the proposal, or to terminate the
17 project completely.

18 (Slide change.)

19 COL. LEOHARD: The first step in preparation
20 of an EIS is to publish a Notice of Intent in the
21 Federal Register and to make this notice available to
22 newspapers and other media and interested parties
23 within the area. The notice for the proposed SLC-7
24 project was published in the Federal Register on 8
25 April 1988.

1 The next step in the Environmental
2 Impact Analysis Process is to hold a public
3 meeting to obtain agency and public opinions on
4 the issues that should be addressed within the
5 Environmental Impact Statement.

6 The purpose of that meeting is to
7 identify significant issues and focus the scope of
8 the EIS. The public meetings for the proposed
9 SLC-7 project were held on 3 May 1988 in Lompoc,
10 and 5 May 88 in Goleta.

11 Issues were further identified in
12 consultation with State, local and federal
13 agencies, as well as internal Air Force review.

14 (Slide Change.)

15 COL. LEOHNRD: Based upon these scoping
16 efforts, we began extensive data gathering and
17 analytical efforts which culminated in the
18 preparation of a Draft EIS. Over 270 copies of
19 the Draft EIS were mailed on 19 July 1989 to all
20 individuals and organizations who requested a
21 copy. In addition, we made copies available to
22 local libraries for public reading.

23 The Draft EIS was filed with the
24 Environmental Protection Agency on 21 July 1989.
25 The Draft EIS notice of availability appeared in

1 the Federal Register on 28 July 1989, and thus
2 began the 45-day public comment period which will
3 end on 11 September 1989.

4 During the public comment period, two
5 actions take place: The first is a public hearing
6 which is held in order to receive comments on the
7 draft document, and that's why we're here this
8 evening. The second activity during the 45-day
9 period is that written comments may be submitted to
10 the Air Force by interested individuals and agencies.
11 All comments that are received during the public
12 hearing, either oral or written, and during the
13 45-day comment period, are addressed in the Final
14 Environmental Impact Statement.

15 Once the Final EIS is prepared,
16 copies are distributed in the same way as the
17 draft document. The Final EIS is filed with the
18 EPA, which publishes a notice of filing in the
19 Federal Register. Once that notice appears, a
20 30-day post filing waiting period starts before
21 the record of decision can be made. All
22 mitigation measures that are approved by the
23 decision makers are required to be implemented.

24 Once the decision has been made, it
25 is reported and announced to the public. The

1 Final EIS and Record of Decision on this project
2 will be published early next year. The Record of
3 Decision will explain the conclusions reached by
4 the Air Force, and the rationale for the selection
5 and alternatives considered.

6 (Slide change.)

7 COL. LEOHWARD: After the potential issues
8 associated with the proposed project are identified,
9 the preparation of the draft EIS is initiated.
10 Prior to the analysis of potential impacts, a
11 description of the proposed actions and its
12 alternatives is developed. In particular, the
13 development and consideration of alternatives to the
14 proposed action is important to the Environmental
15 Impact Analysis process.

16 (Slide change.)

17 COL. LEOHWARD: In order to draw up a list
18 of reasonable alternatives to the proposed
19 project, the proponents select objectives that
20 must be met by the potential alternatives.

21 Next slide please.

22 (Slide change.)

23 COL. LEOHWARD: The objectives of this
24 project are to:

25 Provide a space launch complex to

1 support launch vehicles that carry large
2 payloads;

3 To utilize an expendable launch
4 vehicle;

5 Provide the capability to achieve
6 high altitude orbits;

7 And last, to provide a location
8 that can launch satellites safely into a
9 polar orbit.

10 (Slide change.)

11 COL. LEOHARD: Following the identification
12 of the objectives, conceptual studies identified the
13 components necessary to fulfill the objectives --
14 the project objectives. These studies resulted in
15 the formulation of the proposed actions and the
16 development of alternatives.

17 The following illustrations show
18 the required project components as developed by
19 the proposed actions. They would also apply to
20 the alternates considered.

21 (Slide change.)

22 COL. LEOHARD: The first of the major project
23 elements is the Titan IV/Centaur Space launch vehicle
24 itself. The vehicle is approximately 204 feet long
25 and supports a payload fairing of 86 feet in length,

1 giving it the capacity for transporting large
2 payloads. This the latest version of the Titan
3 vehicle and is equipped with two upgraded solid
4 rocket motors, a liquid fueled core vehicle, and a
5 Centaur upper stage that allows it to put payloads in
6 the 10,000-pound class into high earth orbit.

7 (Slide change.)

8 COL. LEOHWARD: This next overhead shows
9 the artist's rendering of the configuration of the
10 launch pad. Major elements present on the pad
11 include the mobile service tower, the umbilical
12 tower, the launch mount and launch support
13 structure, exhaust duct, the operation support
14 building, propellant storage areas and maintenance
15 structures.

16 The timeline for construction of
17 the proposed actions indicates that it would take
18 at least four years to build; operations would
19 begin in the year 5. Facility design and
20 construction would involve planning for and
21 undertaking site grading, road construction,
22 utilities development, erection of the security
23 fence and the operations support building, the
24 launch support structure, as well as carrying out
25 site rehabilitation measures.

1 Design and construction of ground
2 support systems follow shortly after the facility
3 construction begins. The ground support systems
4 are the aerospace equipment which includes the
5 mobile service tower, the launch mount, the
6 umbilical tower and other support equipment.
7 Beginning somewhere around the start of the fifth
8 year the facility would be complete and launch
9 preparations would begin.

10 (Slide change.)

11 COL. LEOHWARD: As with the construction of
12 any space launch complex there are also numerous
13 offsite facilities which are required to support
14 launch operations. This overhead shows several of
15 these:

16 Launch assembly facility;
17 Payload faring receipt and
18 processing facility;
19 The propellant storage area;
20 The solid rocket motor receipt
21 and processing building where the
22 individual segments of the solid rocket
23 motors would be inspected and
24 pre-assembled prior to transport to the
25 launch pad;

1 And the launch control center.

2 Additional offsite facilities would
3 include the utilities necessary to supply
4 electrical power, communications, water, and other
5 essential commodities to the launch site.

6 (Slide change.)

7 COL. LEOHARD: Project operations are
8 depicted in the next overhead. Operations would
9 be conducted at a level to support two Titan IV
10 launches per year, with the capability to surge to
11 three launches per year.

12 Launch operations include:

13 The delivery, check-out and
14 transportation to the pad with the solid
15 rocket motors;

16 Delivery and erection of the core
17 vehicle;

18 Mating and check-out of the
19 various segments of the vehicle;

20 Erection of the Centaur upper
21 stage;

22 Insertion of the payload;

23 Installation of the payload
24 faring;

25 Vehicle fueling;

1 And finally, vehicle launch.

2 Post-launch operations include
3 cleaning the pad and refurbishing it in time to
4 support the next scheduled launch.

5 (Slide change.)

6 COL. LEOHARD: As required by NEPA, the
7 Air Force has developed and analyzed a number of
8 alternatives that could achieve the desired
9 mission objectives. The purpose of this exercise
10 is to make certain that the proposed action is not
11 selected without due and deliberate consideration
12 of other methods that may be available to achieve
13 the same goals.

14 (Slide change.)

15 COL. LEOHARD: The range of alternatives
16 analyzed include the "no-action" alternative,
17 different launch vehicles, launch locations
18 outside of Vandenberg, and existing the undeveloped
19 launch site on Vandenberg. Some alternatives were
20 considered and eliminated since they could not
21 reasonably achieve the goals of the proposed action
22 or because they would result in equal or greater
23 environmental impacts.

24 If the "no-decision" alternative
25 were to be pursued, the SLC-7 project would not be

1 developed, and the Titan IV/Centaur could not be
2 launched from Vandenberg. It is has been
3 determined that this would unacceptably impact
4 national security. Current defense programs rely
5 on our future ability to launch heavy payloads
6 into near polar orbits. Since there are no other
7 space launch vehicles available to meet the
8 mission requirements, there would be no
9 displacement effect to result in environmental
10 impacts elsewhere.

11 (Slide change.)

12 COL. LEOHWARD: Other launch vehicles were
13 considered. These included the Space Transportation
14 System, or a space shuttle, and the Titan IV NUS,
15 that is, "No Upper Stage."

16 (Slide change.)

17 COL. LEOHWARD: The space shuttle is a
18 reasonable alternative since it's capacity is
19 roughly equipped with Titan IV/Centaur; however,
20 use of the space shuttle was eliminated from
21 further consideration since it is not available
22 for launches from Vandenberg, and since launches
23 from Cape Canaveral Air Force Station in Florida
24 cannot safely provide the required polar orbits.
25 Titan IV, without the upper stage,

1 was considered since it represents the Air Force's
2 largest capacity launch vehicle currently in use.
3 This alternative was eliminated, however, since
4 the Titan IV, without the upper stage, cannot
5 achieve the required high earth orbit combined
6 with capacity requirements.

7 (Slide change.)

8 COL. LEOHWARD: Alternative launch
9 locations outside of Vandenberg were considered
10 for use by Air Force to launch the Titan IV.

11 Next slide.

12 (Slide change.)

13 COL. LEOHWARD: Facilities are available to
14 launch the Titan IV/Centaur from Cape Canaveral;
15 however, this alternative was eliminated from
16 further consideration since near polar orbits
17 cannot be achieved given the large payload
18 requirements.

19 The U.S. Department of the Navy
20 maintains a missile test range on San Clemente
21 Island, off the coast of Southern California. Use
22 of this range would allow for attainment of near
23 polar orbits. However, the launch support
24 facilities shown earlier are lacking at this site.
25 Development of the launch site itself and the

1 necessary facilities including power, sewer, water
2 supply, communications and vehicle processing and
3 preparation facilities would be costly and would
4 result in comparable or greater environmental
5 impacts.

6 The State of Hawaii was evaluated
7 for its capacity to support the space vehicle
8 launch activities. Hawaii also was eliminated
9 from further consideration as an alternative site,
10 because the environmental impact would be greater
11 than those of the options being considered at
12 Vandenberg Air Force Base.

13 The proposed action could be
14 accommodated on other islands in the South Pacific
15 that would allow for polar orbit to be achieved;
16 however, the necessary support facilities including
17 such items as labor force are scarce commodities on
18 these islands. In addition, an entirely new launch
19 support system would be required, including launch
20 control center, telemetry and tracking facilities,
21 propellant storage and vehicle component processing
22 facilities.

23 It is anticipated that the
24 environmental impacts from development of a Titan
25 IV/Centaur launch facility in the South Pacific

1 would be similar to or greater than those incurred
2 at Vandenberg Air Force Base due to the additional
3 construction and the remote nature of the
4 locations. Therefore, this alternative was
5 eliminated from further consideration.

6 (Slide change.)

7 COL. LEOHARD: With the obvious advantages
8 of existing launch support facilities and the
9 general capability of attaining near polar orbits,
10 sites on Vandenberg were identified as reasonable
11 alternatives to the proposed action. Sites
12 identified include some considered and eliminated
13 from further analysis and some considered in
14 detail.

15 (Slide change.)

16 COL. LEOHARD: Sites considered and
17 eliminated from further analysis including
18 existing launch complexes SLC-2, -3, -4, and -5.

19 SLC-2 is a small pad, currently
20 used by the Delta Rocket Program. It's use would
21 require complete razing and reconstruction to meet
22 the Titan IV/Centaur requirements. In addition,
23 due to its location, SLC-2 cannot safely support
24 near polar orbits with the necessary payload
25 capacity.

1 SLC-3 East and West are currently
2 being used to launch Atlas vehicles. Like SLC-2,
3 utilizing SLC-3 would require razing the existing
4 facilities and building new ones, since existing
5 facilities are too small to support the Titan
6 IV/Centaur. In addition, SLC-3 is closer to
7 Lompoc than the proposed site, and would result in
8 higher levels of noise in that community.

9 SLC-4 East is currently being
10 refurbished to accommodate the Titan IV/No Upper
11 Stage vehicle, and SLC-4 West is an operational
12 Titan II facility. These launch complexes will be
13 fully utilized by the existing programs and not
14 available for other use.

15 (Slide change.)

16 COL. LEOHARD: From the suite of alternatives
17 considered, those mentioned previously have been
18 eliminated from further consideration as not feasible
19 in support of the project requirements, or since
20 environmental impacts would be equal to or greater
21 than the proposed actions. This analytical process
22 has resulted in a number of alternatives that were
23 considered in more detail.

24 (Slide change.)

25 COL. LEOHARD: The alternatives considered

1 in detail are all located on South Vandenberg and
2 include the proposed Cypress Ridge site --

3 (Slide change.)

4 COL. LEOHNARD: -- SLC-6 --

5 (Slide change.)

6 COL. LEOHNARD: -- the Vina Terrace
7 alternative site.

8 (Slide change.)

9 COL. LEOHNARD: All are located -- and the
10 Boathouse site. I got those two backwards.

11 All are located so that the near
12 polar launches can be safely achieved and existing
13 offsite facilities and support utilities at
14 Vandenberg can be utilized.

15 Next one.

16 (Slide change.)

17 COL. LEOHNARD: The proposed Cypress Ridge
18 site is currently undeveloped and is being
19 utilized for cattle grazing. The site occupies
20 approximately 120 acres of gently sloping marine
21 terrace, approximately one-half mile from the
22 ocean.

23 (Slide change.)

24 COL. LEOHNARD: The SLC-6 alternative site
25 is very different from the others considered in

1 detail, since it is a developed space launch
2 complex today. The SLC-6 complex was originally
3 built in 1970 for the Manned Orbiting Laboratory
4 program. When constructed, SLC-6 was configured
5 to launch Titan III vehicles. Subsequent to the
6 cancellation of the Manned Orbiting Laboratory
7 program, SLC-6 was modified to support the space
8 shuttle launches. However, primarily due to the
9 1986 Challenger disaster, we have not used SLC-6
10 for shuttle launches.

11 SLC-6 site is approximately 100
12 acres in size, located on the westerly sloping
13 terrace, approximately one mile from the ocean.
14 Since it is a developed site, there is very little
15 vegetation present.

16 Next slide.

17 (Slide change.)

18 COL. LEOHARD: The Boathouse Flats
19 alternative site, like the proposed Cypress Ridge
20 site, is an undeveloped area approximately 130
21 acres in size. The Boathouse Flats site, however,
22 is primarily grassland and is much closer to the
23 ocean than the Cypress Ridge site.

24 (Slide change.)

25 COL. LEOHARD: The Vina Terrace alternative

1 site is also undeveloped and slightly larger than the
2 previous two sites, approximately 150 acres. This
3 additional size is necessary, since the Vina Terrace
4 area is the steepest in topography of the
5 alternatives. This area is vegetated with a mix of
6 grasses and coastal shrub, and at approximately
7 one-and-one-half miles, it is the furthest from the
8 ocean.

9 Next one.

10 (Slide change.)

11 COL. LEOHWARD: After three alternatives
12 to be addressed in detail were identified, the
13 potential environmental impacts from the proposed
14 action and alternatives were analyzed for the
15 inclusion in the Draft EIS. This process began
16 with the efforts to characterize the existing
17 environment based upon the issues identified
18 during our scoping process.

19 (Slide change.)

20 COL. LEOHWARD: As you can see, a wide variety
21 of the data was gathered to address the potential
22 impact. Intensive surveys of vegetation, wildlife
23 and cultural resources were undertaken by the
24 environmental contractor to support the analysis
25 process.

1 Information to characterize the
2 remaining resources was generated through empirical
3 observations, reviews of the existing literature and
4 consultation with government agencies.

5 (Slide change.)

6 COL. LEOHWARD: After data that described the
7 existing environment are gathered, the potential
8 environmental impacts were determined through
9 extensive analytical activities performed by the
10 environmental subcontractor. Mitigation measures to
11 abate potential impacts were developed next. The
12 final step in the environmental evaluation of the
13 proposed action was then to reevaluate impacts with
14 the mitigation measures included.

15 (Slide change.)

16 COL. LEOHWARD: This illustration is an
17 overview of the most important potential
18 environmental impacts that would result from the
19 construction phase or proposed action.

20 You will note that most of the
21 impacts that would result from the project
22 construction, such as those to the geology and the
23 soils, vegetation, wildlife and cultural resources
24 would result from the activities, such as earth
25 moving in the development site itself.

1 Impacts to water resources and
2 economic benefits would result from the temporary
3 presence of construction personnel in the local
4 communities.

5 (Slide change.)

6 COL. LEOHNRD: This next illustration is
7 an overview of the most important potential
8 impacts that would result from the operations
9 phase. Impacts to health and safety, vegetation,
10 and wildlife are expected to be concentrated in
11 the vicinity of the launch pad itself.

12 Potential impacts to water
13 resources, socioeconomics, air quality, noise
14 levels and recreation are expected to occur in
15 areas surrounding Vandenberg.

16 That concludes my briefing.

17 I guess after a short recess we
18 will entertain questions and comments.

19 COL. MCSHANE: Thank you, Colonel
20 Leohnard.

21 Let me go over the procedures again
22 for the benefit of some who may have come in after
23 we got started.

24 You were invited to fill out a
25 registration card when you came in. If you have

1 not done that, please do so while we're taking a
2 break.

3 Regarding the making of a statement
4 tonight, elected public officials will be called upon
5 first for their statements, then representatives of
6 organizations. Those persons will have 10 minutes to
7 speak, if they desire to use that long. Individual's
8 statements should be limited to five minutes so that
9 all interested parties have an opportunity to speak.

10 If you do not wish to make a public
11 statement, or if we run out of time before you have
12 an opportunity to speak, or if you have additional
13 comments beyond those you are able to make within
14 your allotted time, you may turn in your written
15 comments after the meeting or send them to the
16 address provided on the comment statement that they
17 have back there.

18 I recognize that some people may wish
19 to make statements on defense policy, nuclear
20 weapons, arms control and fiscal policy at this
21 meeting; however, such comments are best directed to
22 policy makers such as your congressman and senators.
23 Please limit your comments to environmental issues.

24 We'll take a 10-minute recess.

25 Please try and be back here by about

1 7:43.

2 (Brief recess.)

3 COL. McSHANE: If everyone would please
4 have a seat, we'll get started again.

5 This is the time when you'll be
6 able to make your statements about the Draft
7 Environmental Impact Statement and also ask any
8 questions that you might have about it.

9 Our procedure will be that once I call
10 on you, please step up here to the microphone. We
11 want everybody to be able hear your question and your
12 statement, and we want our court reporter to be able
13 to record it.

14 Please state your name and your
15 affiliation, or your address, and then ask your
16 question or make your statement. If you read from
17 a prepared statement which you want entered into
18 the record, please leave it with me and we'll see
19 that it gets attached to the record.

20 Now, in sorting through the cards I
21 found that only three people indicated that they
22 wanted to make a statement. If that was just an
23 error in marking the card, please let us know,
24 because it looks like we're going to have plenty
25 of time for people to make statements here.

1 Start out with Mr. Howard Grantz.

2 MR. GRANTZ: Thank you.

3 My name is Howard Grantz. I live
4 at 367 St. Andrews Way in Vandenberg Village. I'm
5 here as a President of the Vandenberg Village
6 Community Services District. I have a prepared
7 statement for the secretary and for the press.

8 Our primarily concern, as a
9 services district, is that for water. Water is
10 perhaps the most critical environmental issue in
11 this part of California. This EIR describes the
12 consequence of a project, the consequence of the
13 water, as being a consumption of 176 acre feet per
14 year and that's a consequence. It does not
15 discuss the impact upon our environment, the
[258] 16 impact upon the local aquifer for which the water
17 is extracted. This is called the "Lompoc Plain
18 Aquifer."

19 This aquifer is overdrafted now and
20 has been by almost 8,000 acre feet in the last six
21 years. In addition to that, we are committed as a
22 city here, to provide water for the WYE at 500
[259] 23 acre feet per year, Allan Hancock Campus, the
24 Spaceport Museum, and several hundred houses being
25 built. Now, on top of that, we'll have a demand

1 then for this water for this project. And there's
2 a question in my mind as to whether or not we'll
3 have enough water to provide for the needs of this
4 program.

5 Therefore, the point we're making is
6 that this EIR, which treats water very lightly,
7 should be expanded to cover much more detail, the
8 impact upon the Lompoc Plain Aquifer. As a
[260] 9 consequence of that, as that aquifer is overdrafted,
10 it draws water from our aquifer and the Uplands
11 Aquifer. And therefore then, there are two aquifers
12 that are affected: The one here in which Lompoc gets
13 its water and the one in the Uplands.

14 Another point of interest, the amount
[261] 15 of water being consumed -- or will be consumed, goes
16 beyond the County's threshold of significance, which
17 should be remembered. Therefore, we believe - we as
18 a community services district - that this EIR should
19 be expanded to discuss and define the specific
20 impacts and their mitigation on both the Lompoc Plain
21 Aquifer and the Uplands Aquifer due to this project.

22 The increased overdraft in the Lompoc
23 Plain aquifer results in additional water being
24 drained from our Uplands aquifer. For specific
25 details on the water consumption, the mitigation

1 factors and details of our aquifer, I refer you to a
2 report done by the Stetson Engineers which is
3 referenced in this document.

4 The section of the EIR that related
5 to water, should be rewritten and expanded to fill
6 these parts I just mentioned because the
7 environmental impact on our aquifers concern all
8 people here in the Valley.

9 Thank you very much.

10 COL. McSHANE: Thank you, sir.

11 Colonel Leohnard, did you want to
12 comment on that at this time or reserve that for
13 the final report?

14 COL. LEOHWARD: We'll reserve that for the
15 final report.

16 COL. McSHANE: All right.

17 Next speaker is James Spellman, Jr.

18 MR. SPELLMAN: Good evening, Colonel, Members
19 of the staff, ladies and gentlemen. I'm Jim
20 Spellman. My current address is 416 West North
21 Avenue. I'm here as a representative of the National
22 Space Society which is a private nonprofit public
23 information organization; however, when it comes to
24 tonight, I choose to elect to speak more as an
25 individual and not as representative of an

1 organization. And I hope to keep to the five-minute
2 limit.

3 You would think that with the
4 organization that I belong to, we would obviously
5 want to support seeing the Space Launch Complex 7
6 being built; however, in this person's opinion that
7 is not necessarily the case. We do feel that the
8 Titan IV is a necessary vehicle for the short access
9 into space; however, we do question the need for the
10 construction of SLC-7 out here in this area.

11 What I have here, and I'm afraid my
12 graphs are not as great as yours, but I have a
13 listing here of the Titan family which is a
14 following series from the original Titan 1 that
15 was being built in the 1950s, to the current Titan
16 IV. As you will notice, there is a little bit of
17 a commonality in the launch vehicle, particularly
18 in the first stage.

19 Currently we have two launch pads,
20 SLC-4 East and SLC-4 West. Now, the east pad has
21 been modified to handle the Titan IV with No Upper
22 Stage. And the SLC-4 West pad is currently being
23 used for the Titan II operations, which I might
24 add, it has been done at a considerable savings to
25 the tax payers. The Titan II was originally a

1 weapons system, and I believe there was somewhere
2 between 50 and 100 of those vehicles deployed
3 throughout the United States. They have now been
4 modified and converted into space launch vehicles
5 which, as I said, is considerable savings to the
6 public.

7 However, there is a finite set of
8 those Titan IIs that have been constructed for or
9 reconfigured for space launch vehicles. My
10 question is: Why do we not reconfigure the launch
[263] 11 pad as SLC-4 West to handle, at the present time,
12 both Titan II as well as the Titan IV with the
13 universal launch mount?

14 There has also been some talk about
15 the Titan II being upgraded with solid rocket
16 boosters which would essentially make it look very
17 much like a shorter version of the Titan IV/Centaur.

18 Some other considerations that were
19 made tonight was the inclusion of SLC-6 as a
20 possibility of modifying for Titan IV/Centaur use,
21 and there was also some consideration that using the
22 space shuttle vehicle at SLC-6, but that was ruled
23 out.

24 However, nothing has been stated
25 tonight about the Shuttle C, which is an unmanned

1 version of the space shuttle, which is capable of
2 taking about a 100,000 pound payload into orbit
3 which is twice the capacity of Titan IV.

4 And once again, I apologize for the
5 size of my graphics, but as you'll notice, Shuttle
6 C is not very much different than the shuttle.
7 The orbiter has been replaced with an unmanned
8 canister. I would think that another alternative
9 would be to consider using the Shuttle C, which
10 can be brought on line by 1994, at least one or
11 two years earlier than Titan IV/Centaur, and
[264] 12 capable of taking a greater payload. That would
13 also leave the option open, in the future, for
14 using the regular shuttle out here because of the
15 launch commonality between the two systems.

16 Thank you very much.

17 COL. McSHANE: Thank you.

18 W.S. Mullins.

19 MR. MULLINS: Bill Mullins, 1204 North
20 Orchid.

21 Two issues I'd like to see addressed
22 in the EIR: One, is an in depth study of the water;
23 and the other is the socioeconomic development of
24 the shuttle --

25 UNIDENTIFIED SPEAKER: Excuse me. We

1 cannot hear you in the back.

2 THE WITNESS: Oh, I'm sorry.

3 The two issues I'd like to see
[265] 4 addressed in the EIR: One, is the in depth look
5 at the water as to how it can be mitigated; and
6 the other is socioeconomics of the facilities for
[266] 7 the SLC-7 pertaining to domestic versus foreign
8 products.

9 I'd like to see that addressed
10 somewhat in the EIR.

11 Thank you.

12 COL. McSHANE: Thank you.

13 LeRoy Scolari.

14 MR. SCOLARI: LeRoy Scolari, 423 North "G"
15 Street. I'm a local rancher in the area
16 immediately east of the proposed construction
17 site.

18 In going through the document, I find
19 very little reference in regards to land use and
20 other impacts in that area. I find considerable
21 treatment of the area generally south and east in the
22 Palama Beach area, Bixby Ranch, but very little for
23 those lands that are primarily east of the launch
24 site itself, east and somewhat south. In other
25 words, the immediate boundaries to the south of South

1 Vandenberg on the inland side.

[267] 2 Can anyone -- if anyone can direct
3 me as to how that's been treated, I'd appreciate
4 it. But if it hasn't been treated, I'd like to
5 ask that it be treated.

6 COL. McSHANE: Colonel Leohnard, do you
7 have someone who can talk about that tonight?

8 COL. LEOHNARD: Well, no. We'll look it
9 up.

10 MR. EDWARDS: Give us a minute.

11 COL. LEOHNARD: We looked at it in terms of
12 its impact on the project and our project's impact
13 on the area, and found no significant impacts one
14 way or the other.

15 We have our consistency plan which
16 also addresses that before the Coastal Commission
17 now, but we'd be willing and glad to go back and
18 take another look to make sure we haven't missed
19 anything.

20 MR. SCOLARI: I might say that the area
21 concerned is not within the coastal zone. It's on
22 the -- over the hill side from it.

23 COL. LEOHNARD: Okay. If at the end, if you
24 could come up and show us on your map precisely what
25 you're talking about, it would help us a lot.

1 COL. McSHANE: Thank you.

2 Next speaker is Jeremy Graves.

3 MR. GRAVES: My name is Jeremy Graves. I'm
4 an associate planner with the Lompoc Community
5 Development Department.

6 We appreciate the Air Force holding
7 hearings in Lompoc, both at this time and May of
8 '88, as well as tonight. We appreciate the review
9 period you've provided with the public.

10 As you can see, this is an issue of
11 great interest to the Lompoc Community. The City
12 of Lompoc is not providing a prepared written
13 statement tonight, but we will be providing a
[268] 14 written statement prior to the conclusion of your
15 review period.

16 Thank you once again for holding
17 the public hearing tonight.

18 COL. McSHANE: Thank you.

19 That's all the cards that I have
20 that show that people wanted to speak. Is there
21 anyone else who desires to speak?

22 Okay. We got one.

23 Elaine Schneider.

24 MS. SCHNEIDER: My name is Elaine Schneider.
25 I'm a representative from the Chumash Cultural

1 Heritage Association, affiliated with the Santa Ynez
2 Indian Reservation. I am a member of the Santa Ynez
3 Indian Reservation. What I'd like to address is the
4 cultural resource issue that's going to be impacted
5 by these projects.

6 We've worked with Vandenberg for a
7 very long time, for over 10 years now, and the
8 impacts every time have been to Native American
9 sites almost. This time this project will cause a
10 destruction of -- in these three different areas,
11 will cause a major destruction of Native American
12 sites.

13 Cypress Ridge site, the Boathouse
14 site, which has already been scraped once, has
15 lost cultural heritage material. The other site,
16 they say is a lot of vegetation on it, when we
17 looked through it there was nothing -- it was not
18 really visible. But the Cypress Ridge site which
19 is next to SLC-6, contains everything including
20 what we call, "The Gateway to the West," which is
21 our burial grounds.

[269] 22 We, of the Indian community, are
23 very upset at the possibility of not using SLC-6
24 since it's already been taken apart, put back
25 together again three or four times. Why can't it

1 be used? Why can't the government money be spent
2 to upgrade that site for this project? Why does
3 another Native American site have to be destroyed?

4 We have said a lot. Maybe not in
5 public, but through the official program or
6 process of what we've tried to do. We've been
7 there, we watched it be destroyed, and we're there
8 again, and we're waiting to see if it's going to
9 be destroyed again. How much more does the Native
10 American community and the Chumash nation and its
11 people have to take, before somebody listens to
12 our side?

13 I am asking that the Cypress Ridge
14 site not be touched again. It may not -- it may
15 not mean anything to you, but it is our burial
16 sites that are destroyed. There is not enough
17 information in there to tell you our side of it.
18 We need to project our image. Our rights have to
19 be protected somewhere. That's what we're asking
20 for. That's why I'm here at this meeting. I want
21 to see that SLC-6 be upgraded to handle this
22 project, and the destruction of the other sites be
23 preserved -- I don't mean "destruction," I mean
24 that the area be preserved.

25 I am not a very good speaker and I

1 apologize for this nervousness, but I do want to
2 stress that we are the first people of this area,
3 we want to see it preserved for our children. You
4 should see what is out there. We have sites. We
5 have people that can give you verbal history of
6 out there.

7 One of the sites in the area -- or
8 the Cypress Ridge site and the Boathouse area and
9 the other sites are near enough to Nogto. That's
10 13 feet of midden. That's over 10,000 years of
11 living that could be possibly impacted by these
12 sites being -- by this project being built out
13 there.

14 It's only a dirt road right now,
15 but if this project proceeds, it will become a
16 paved road. The paved road causes buildings. It
17 causes access. It let's people park there. It
18 let's raiders in. It causes destruction.

19 SLC-6, we watched it, the site
20 being taken apart, the information taken out for
21 Indians for you, and paperwork for somebody to
22 read. It's in the history. It's in the museum.
23 It hasn't even been catalogued for you to see
24 what's been taken out of there. No reports have
25 been written on it yet. And yet here comes this

1 new project, SLC-7, to do damage a mile down the
2 road, just about.

3 You can see SLC-6 from Cypress
4 Ridge. Cypress Ridge is going to have to have a
5 water line to SLC-7. SLC-7 means you're going to
6 go down a ridge, across a little valley, build a
7 road that you put in there. They took a whole
8 road out, now you're talking about building
9 another road for SLC-7.

10 I'm skipping around, but these are
11 things that happened on sites which are visible,
12 which we saw happen. We saw destruction. We saw
13 preservation also. I'm not saying it's all been
14 bad, but I'm saying that the possibility of
15 building SLC-7 in the Cypress Ridge area will
[270] 16 cause a major loss of our heritage, because the
17 impacts would be to what we call "Our Gate to the
18 World Beyond."

19 Thank you.

20 COL. McSHANE: Thank you.

21 Anyone else desire to speak
22 tonight? Anyone else have a question for any of
23 the panel members?

24 We will conclude the proceedings in a
25 couple minutes. Please remember that you have until

1 11 September 1989, to submit written materials to be
2 included in the transcript of the hearings. And
3 those written statements will be fully considered and
4 addressed in the Final Environmental Impact
5 Statement. Once again the oral and the written
6 statements and comments will be afforded equal wait.

7 Officials of the Air Force appreciate
8 your efforts to come out tonight and contribute your
9 views to this public hearing. We thank you for your
10 courteous attention. Please be assured that the Air
11 Force decision makers will carefully consider each
12 viewpoint raised here tonight when deciding the
13 ultimate course of action on this proposal.

14 Thank you.

15 This public hearing is adjourned at
16 8:06 p.m.

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DEVINE-HALL & ASSOCIATES

RESPONSES TO COMMENTS RECEIVED AT PUBLIC HEARING
LOMPOC, CALIFORNIA, AUGUST 30, 1989

Commenter No. 1: Vandenberg Village Community Services - Howard Grantz, President

Comment No. 258: Impacts on Lompoc Plain Aquifer and Lompoc Uplands Aquifer

Comment: It does not discuss the impact upon our environment, the impact upon the local aquifer for which the water is extracted. This is called the "Lompoc Plain Aquifer."

Response: Impacts to the Lompoc Plain and Upland aquifers are discussed in Section 3.2.1.2, and are addressed in response to Comment Nos. 180 and 181. Additional detail regarding hydrologic relationships between the Lompoc Plain, Lompoc Terrace, and Upland aquifers is given in response to Comment No. 253.

Comment No. 259: Impacts on Community Water Supplies

Comment: This aquifer is overdrafted now and has been by almost 8,000 acre feet in the last six years. In addition to that, we are committed as a city here, to provide water to the WYF at 500 acre feet per year, Alan Hancock Campus, the Spaceport Museum, and several hundred houses being built. Now, on top of that, we'll have a demand then for water for this project. And there's a question in my mind as to whether or not we'll have enough water to provide for the needs of this program.

Response: See responses to Comment Nos. 180, 181, 134, and 149. The Draft EIS notes that the increased water demands that would be expected to arise from the proposed project would be small but significant since the Lompoc Plain aquifer is in overdraft.

Comment No. 260: Impacts on Lompoc Plain Aquifer and Lompoc Uplands Aquifer

Comment: Therefore, the point we're making is that this EIR, which treats water very lightly, should be expanded to cover much more detail, the impact upon the Lompoc Plain Aquifer. As a consequence of that, as the aquifer is overdrafted, it draws water from our aquifer and the Uplands Aquifer. And therefore then, there are two aquifers that are affected: the one here in which Lompoc gets its water and the one in the Uplands.

Response: See response to Comment No. 181. See response to Comment No. 198 for description of the hydrologic relationships between the Lompoc Plain, Lompoc Terrace, and Lompoc Upland aquifers.

Comment No. 261: Santa Barbara County Level of Significance for Ground Water Impacts

Comment: Another point of interest, the amount of water being consumed --- or will be consumed, goes beyond the County's threshold of significance, which should be remembered.

Response: The proposed withdrawals are above Santa Barbara's significance threshold of 7.68 acre feet per year.

Comment No. 262: Discussion of Impacts to Ground Water in Draft EIS

Comment: The section of the EIR that related to water, should be rewritten and expanded to fill these parts I just mentioned because the environmental impact on our aquifers concern all people here in the Valley.

Response: See responses to Comment Nos. 258, 259, 260, and 261.

Commenter No. 2: James Spellman, Jr., National Space Society

Comment No. 263: Use of SLC-4 for Titan IV and Titan II

Comment: My question is: Why do we not reconfigure the launch pad as SLC-4 West to handle, at the present time, both Titan II as well as the Titan IV with the universal launch mount?

Response: As described in Section 2.2.3, VAFB Launch Sites, SLC-4 West is an operational launch facility with scheduled missions that would be incompatible with the mission requirements for the Titan IV/Centaur from VAFB.

Comment No. 264: Use of Shuttle C in Place of Titan IV/Centaur

Comment: I would think that another alternative would be to consider using the Shuttle C, which can be brought on line by 1994, at least one or two years earlier than Titan IV/Centaur, and capable of taking a greater payload. That would also leave the option open, in the future, for using the regular shuttle out here because of the launch commonality between the two systems.

Response: At this point in time, the Shuttle C is an unfunded program in the development stage that does not have a firm schedule for completion. This uncertainty regarding project completion precluded the Shuttle C from consideration as an alternative vehicle.

Commenter No. 3: W. S. Mullins

Comment No. 265: Mitigation of Water Resources

Comment: ... the indepth look at the water as to how it can be mitigated ...

Response: Mitigation measures proposed for conservation of water resources are contained in Section 4.2.4.1 through 4.2.4.4 of the Draft EIS. Additional mitigation measures to reduce the demand for ground water are contained in response to Comment No. 67. Measures to control erosion and surface water runoff have been incorporated into the project design criteria, and low-use water fixtures would be installed in new facilities to reduce water consumption.

Comment No. 266: Acquisition of Domestic and Foreign Materials

Comment: ... is socioeconomics of the facilities for the SLC-7 pertaining to domestic versus foreign products.

Response: Materials for the construction and operation of SLC-7 would be procured as consistent with the Buy American Act (41 USC 10), as per the Federal Acquisition Regulation (FAR), Part 25, Foreign Acquisition, and applicable USAF regulations. The Buy American Act requires that only domestic end products be acquired for public use except for materials where cost would be unreasonable, where purchasing domestic materials would be against the public interest, or if the material is not made

in the United States. As a result of these regulations, it is anticipated that the bulk of materials for construction and operations of SLC-7 would come from domestic sources.

Commenter No. 4: LeRoy Scolari, Local Rancher

Comment No. 267: Impacts on Lands East of the Project Site

Comment: I find considerable treatment of the area generally south and east in the Palma (SIC) Beach area, Bixby Ranch, but very little for those lands that are primarily east of the launch site itself, east and somewhat south.

Response: Lands to the east and south of VAFB were analyzed in the Draft EIS in terms of land use and other impacts. Impacts to these areas are small to lands in these areas since they are sheltered from the proposed and alternative launch locations by the Santa Ynez mountains. The emphasis placed on the Bixby Ranch and Jalama Beach areas resulted from identification of those areas and concerns at the public scoping meetings held for the SLC-7 EIAP. Potential impacts considered for this area included Air Quality and Meteorology (Section 4.5), Noise (Section 4.7), Transportation (Section 4.10), Health and Safety (Section 4.11), and Socioeconomics (Section 4.12).

Commenter No. 5: Jeremy Graves, Associate Planner,
Lompoc Community Development Department

Comment No. 268: Written Comments to be Provided

Comment: The City of Lompoc is not providing a prepared written statement tonight, but we will be providing a written statement prior to the conclusion of your review period.

Response: Your comment is noted.

Commenter No. 6: Elaine Schneider, Representative, Chumash Cultural Heritage
Association, Santa Ynez Indian Reservation

Comment No. 269: Selection of SLC-6

Comment: We, of the Indian community, are very upset at the possibility of not using SLC-6 since it's already been taken apart, put back together again three or four times. Why can't it be used?

Response: See Response to Comment No. 126.

Comment No. 270: Impacts to the Chumash "Gate to the World Beyond"

Comment: I'm not saying it's all been bad, but I'm saying that the possibility of building SLC-7 on the Cypress Ridge area will cause a major loss of our heritage, because the impacts would be to what we call "Our Gate to the World Beyond."

Response: As noted in response to Comment No. 249, development of SLC-7 would be consistent with applicable laws and regulations for the regional preservation of Native American heritage such as the "Gate to the World Beyond" to the fullest extent possible.

**2.2.2 SANTA BARBARA, CALIFORNIA PUBLIC HEARING TRANSCRIPT
AND RESPONSES TO COMMENTS**

PUBLIC HEARING
DEPARTMENT OF THE AIR FORCE
SYSTEMS COMMAND

DRAFT ENVIRONMENTAL IMPACT
STATEMENT FOR PROPOSED
TITAN IV/CENTAUR SPACE
LAUNCH COMPLEX 7
VANDENBERG AIR FORCE BASE,
CALIFORNIA

NO.

REPORTER'S TRANSCRIPT OF PROCEEDINGS

Thursday, August 31, 1989

7:05 P.M.

Santa Barbara, California

REPORTED BY:
ELLEN Q. BRESSI
CSR No. 7184

CERTIFIED
ORIGINAL



Derine-Hall & Associates

CERTIFIED SHORTHAND REPORTERS

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1 PUBLIC HEARING
2 DEPARTMENT OF THE AIR FORCE
3 SYSTEMS COMMAND
4 THURSDAY, AUGUST 31, 1989
5
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9 DRAFT ENVIRONMENTAL IMPACT STATEMENT FOR
10 PROPOSED TITAN IV/CENTAUR SPACE LAUNCH COMPLEX 7
11 VANDENBERG AIR FORCE BASE, CALIFORNIA
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18 SANTA BARBARA
19 COUNTY SUPERINTENDENT OF SCHOOLS AUDITORIUM
20 4400 CATHEDRAL OAKS ROAD
21 SANTA BARBARA, CALIFORNIA
22 7:05 P.M.
23

24 REPORTER BY:
25 ELLEN Q. BRESSI
CSR. No. 7184

1 APPEARANCES:

2

3 COLONEL MIKE McSHANE, Military Trial
4 Judge, designated as presiding officer by
the Office of the Judge Advocate General in
Washington

5

6 LIEUTENANT GENE BRANCH, Administrative
officer

7

COLONEL MIKE HAYNER, Western Space
and Missile Center at Vandenberg Air Force
Base; Space Launch Complex 7 Program Manager

8

9 COLONEL BILL LEOHARD, Design,
10 construction and environmental analysis of
Systems Command facilities and programs at
Vandenberg Air Force Base

11

JOHN EDWARDS, Manager of the
12 environmental analysis for Space Launch
Complex 7

13

DAN EVANS, Environmental Solutions,
14 Incorporated, Air Force contractor conducting
the environmental analysis for Space Launch
Complex 7

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20 PUBLIC SPEAKERS:

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REGGIE PAGALING

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1 SANTA BARBARA, CALIFORNIA

2 THURSDAY, AUGUST 31, 1989

3 7:05 P.M.

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6 COL. McSHANE: Good evening, folks. My
7 name is Mike McShane. I'm a full-time Military
8 Trial Judge for the Air Force Courts Marshall.
9 I've been designated by the office of the Judge
10 Advocate General in Washington as presiding
11 officer for tonight's public hearing upon the
12 Draft Environmental Impact Statement.

13 I want to start out by advising you
14 that the National Environmental Policy Act and
15 Implementing Regulations, require federal agencies
16 to carefully analyze the potential environmental
17 impacts of proposed actions, and to use those
18 analyses in arriving at decisions or recommendations
19 on whether and how to proceed with those actions.

20 The Air Force has prepared and
21 distributed, in accordance with applicable
22 regulations, a Draft Environmental Impact Statement
23 addressing a proposal for the construction and
24 operation of a Titan IV/Centaur Space Launch Complex
25 in support of the Department of Defense Space

1 Program.

2 I am not here as an expert on this
3 proposal nor have I had any connection with its
4 development. I'm not here to act as a legal
5 advisor to the Air Force experts who will address
6 this proposal. My purpose is simply to insure
7 that we have a fair, orderly hearing and that all
8 who wish to be heard have a fair chance to speak.

9 Let me take just a moment to
10 explain how tonight's hearing will proceed. This
11 isn't going to be a debate nor a referendum or
12 vote upon the proposal itself. There will be no
13 demonstrations, nor should you signify your
14 agreement or disagreement with a speaker's
15 position by applause or other expressions of
16 approval or disapproval. That adds nothing to the
17 hearing record and simply wastes your valuable
18 time.

19 What this informal hearing is
20 intended to provide is a public forum for two-way
21 communications, with a view to improvement of the
22 overall decision making process. The first part
23 of that two-way communication calls for you to
24 listen carefully to what the Air Force experts say
25 as you are briefed on the proposal and its

1 anticipated environmental consequences.

2 After that briefing, you will be
3 able to ask questions to clarify, in your own
4 minds, any points made in the briefing or in the
5 Draft Environmental Impact Statement. Part 2 of this
6 two-way communication process is for you to tell the
7 Air Force experts what you think, to give Air Force
8 decision makers the benefit of your knowledge of the
9 local area affected by the proposal and any
10 environmental hazards you perceive.

11 This is a proposal. It's not
12 something that's already been decided, approved
13 or funded. Our hearing isn't for the purpose of
14 justifying anything, but rather to identify and
15 assess pertinent impact, including your personal
16 prospectives as to those impacts.

17 If you have not already done so,
18 you should fill out one of these public hearing
19 registration cards. It's just kind of to keep the
20 attendance and also to indicate on there if you
21 want to make a statement.

22 Later on, I will recognize members
23 of the public for the purpose of putting questions
24 to the Air Force experts, or making statements
25 about this proposal. Don't be shy or hesitant to

1 ask questions or make statements. This is an
2 informal hearing and you can ask any questions
3 that you want to ask.

4 I want to help insure that all
5 those who wish to speak have a fair chance to be
6 heard, so please help me enforce the following
7 ground rules:

8 First, only speak after I recognize
9 you and please address your remarks to me.

10 Second, speak clearly and slowly,
11 starting out with your full name, address
12 and the capacity in which you appear. That
13 is, as a public official, a designated
14 representative of a private association,
15 or a person speaking solely in his or her
16 own behalf, so that our court reporter,
17 Mrs. Bressi who has to make a verbatim
18 record of these proceedings, can do her
19 job professionally.

20 Third, if you have a question for
21 the panel, ask one question at a time.
22 I will allow a reasonable number of
23 questions.

24 Fourth, honor any request from me
25 that you cease speaking.

1 Fifth, do not speak while another
2 is speaking. Only one person will be
3 recognized at a time.

4 And finally, I'm sure that this
5 is a no smoking area, so everyone should
6 please comply with that rule.

7 It is possible that there will be
8 questions here tonight that the Air Force experts
9 can't answer. That could happen for one or two
10 reasons: First, even though we do have a lot of
11 expertise here, they will not attempt to answer
12 any question unless they are confident that they
13 can answer it accurately. And second, there may
14 be questions that have national security
15 implications, and these must be reviewed further
16 before answers are provided. If this should occur
17 and if the question is relevant, I can assure you
18 that it will be addressed in the final document,
19 and each of you may request a copy of that
20 document.

21 You're invited to fill out a
22 written comment sheet, if you desire to do so,
23 rather than making the public statement or if you
24 want to do so in addition to make a public
25 statement. Statements can be submitted at any

1 time prior to 11 September 1989, and you can mail
2 them to the address which is listed on the comment
3 sheet or leave them here tonight

4 Regardless of whether you read your
5 statement on the record tonight or mail it in
6 later, it will be carefully considered and made
7 part of the record of these proceedings. It will
8 have equal weight and receive the same careful
9 consideration, whether made during tonight's
10 hearing or afterward.

11 I want to thank everyone who turned
12 out tonight. Your presence here is commendable in
13 that it reflects a great interest in your
14 community and in those things that are important
15 to it. Let me assure you that your interest is
16 the primary purpose for us being here.

17 Now it's my pleasure to introduce
18 Colonel Bill Leonard, who will brief the proposal
19 tonight.

20 Colonel.

21 COL. LEOHNRD: Thank you, Colonel McShane.

22 As mentioned, I'm Colonel Bill
23 Leohnard, Director of Acquisition Civil
24 Engineering at Space Systems Division in Los
25 Angeles. My Directorate is responsible for the

1 design, construction and environmental analysis of
2 Systems Command facilities located in Vandenberg
3 Air Force Base. This includes the project for
4 which we are here tonight, the proposed Space
5 Launch Complex 7 or Titan IV/Centaur Space Launch
6 Vehicle.

7 First I'd like to introduce the other
8 individuals on the dais, who will be assisting us
9 this evening. Next to Colonel McShane is Lieutenant
10 Branch who is acting as our administrative officer
11 for this evening. To his right is Colonel Mike
12 Hayner, who is with the Western Space and Missile
13 Center at Vandenberg Air Force Base, and is the Space
14 Launch Complex 7 Program Manager. To my right is Mr.
15 John Edwards, a member of my staff and the manager of
16 the environmental analysis for SLC-7. To his right
17 is Mr. Dan Evans, representing Environmental
18 Solutions Incorporated, the Air Force contractor
19 conducting the environmental analysis for the
20 proposed project.

21 As Colonel McShane mentioned, we
22 will try to answer all your questions about the
23 Environmental Impact Analysis Process and the
24 Proposed Action, or the Draft EIS, but those
25 questions that we are unable to answer, rest

1 assured that they will be addressed within the
2 Final Environmental Impact Statement.

3 (Slide change.)

4 COL. LEOHWARD: I will now explain how the
5 Environmental Impact Analysis Process is
6 conducted, and give you an overview of our
7 proposed action and the general findings of the
8 Draft Environmental Impact Statement.

9 The National Environmental Policy
10 Act, or NEPA, is implemented by the President's
11 Council on Environmental Quality Regulation. NEPA
12 requires that the federal agencies analyze
13 potential environmental impacts of a proposed
14 project and carefully consider alternatives,
15 including the no-action alternative. These
16 analyses are then used to make decisions and
17 recommendations on whether and how to proceed with
18 the project.

19 As shown on the screen, the
20 Environmental Impact Analysis is started when the
21 Air Force project proponent requests environmental
22 impact analysis from the Air Force environmental
23 planners. The project proponents do this at an
24 early stage in the project planning to determine
25 the extent of environmental documentation needed,

1 whether it be a Categorical Exclusion, an
2 Environmental Assessment or Environmental Impact
3 Statement.

4 The regulation of the President's
5 Council on Environmental Quality allow Categorical
6 Exclusions for classes of action that do not
7 individually or cumulatively affect the environment.
8 Therefore, these actions require neither an
9 Environmental Assessment nor an Environmental Impact
10 Statement.

11 Early in the analysis process we
12 determined that this space launch complex did not
13 qualify for a Categorical Exclusion.

14 The next step in the Environmental
15 Analysis Process is to determine if the project
16 needs an Environmental Assessment or the more
17 extensive Environmental Impact Statement. If it
18 appears that the project will have any significant
19 impacts, the environmental planners will elect to
20 proceed with an Environmental Impact Statement.

21 In early 1988, when we were
22 planning this proposed action, it was determined
23 that due to the potential significant impacts we
24 would proceed with an Environmental Impact
25 Statement.

1 The completion of this process,
2 then, is the decision made by the Air Force about
3 whether to proceed with the proposed action, a
4 modification of that proposed action, or to
5 terminate the project altogether.

6 (Slide change.)

7 COL. LEOHWARD: The first step in the
8 preparation of an EIS is to publish a Notice of
9 Intent in the Federal Register and to make this
10 notice available to newspapers and other media and
11 interested party within the area. The notice for
12 the proposed SLC-7 project was published in the
13 Federal Register April 8th, 1988.

14 The next step in the Environmental
15 Impact Analysis Process is to hold a meeting to
16 obtain the agency and public opinions on the
17 issues that should be addressed within the EIS.

18 The purpose of that meeting is to
19 identify significant issues and focus the scope of
20 the Environmental Impact Statement.

21 The public scoping meetings for
22 SLC-7 were held on May 3rd, 1988, in Lompoc, and
23 May 5th, 1988, in Goleta.

24 Issues were further identified in
25 consultation with State, local and federal

1 agencies, as well as by internal Air Force review.

2 (Slide change.)

3 COL. LEONARD: Based on the scoping
4 efforts, we began extensive data gathering and
5 analytical efforts which culminated in the
6 preparation of the Draft EIS. Over 270 copies
7 were mailed on July 19th, 1989, to all individuals
8 and organizations who had requested a copy. In
9 addition, we made copies available to local
10 libraries for public reading.

11 The Draft EIS was filed with the
12 Environmental Protection Agency on 21 July 1989,
13 and the notice of availability appeared in the
14 Federal Register on July 28th, 1989. Thus began
15 the 45-day public comment period for the which
16 will end on September 11th of this year.

17 During the public comment period,
18 two actions will take place: The first is the
19 public hearing which is held in order to receive
20 comments on the draft document, which is why we
21 are here this evening. The second activity during
22 the 45-day period is that written comments may be
23 submitted to the Air Force by interested
24 individuals and agencies. All comments that are
25 received during the public hearing, either oral or

1 written, and during the 45-day comment period, are
2 addressed in the Final Environmental Impact
3 Statement.

4 Once the Final EIS is prepared,
5 copies will be distributed in the same manner as
6 the draft document. The Final EIS is filed with
7 the EPA, which publishes a Notice of Filing in the
8 Federal Register. Once this notice appears, a
9 30-day post filing waiting period starts before
10 the Record of Decision can be made. All
11 mitigation measures that are approved by the
12 decision makers are required to be implemented.

13 Once the decision has been made, it
14 is reported and announced to the public. The
15 Final EIS and Record of Decision on this project
16 will be published in early next year. The Record
17 of Decision will explain the conclusion reached by
18 the Air Force, the rationale for that selection
19 and the alternatives considered.

20 (Slide change.)

21 COL. LEOHARD: After the potential issues
22 associating with the proposed project are
23 identified, the preparation of the Draft EIS is
24 initiated. Prior to the analysis of potential
25 impacts, a description of the proposed actions and

1 its alternatives are developed. In particular,
2 the development and consideration of alternatives
3 to the proposed action is an important part of the
4 Environmental Impact Analysis Process.

5 (Slide change.)

6 COL. LEOHARD: In order to draw a list of
7 reasonable alternatives, the proponents select
8 objectives that must be met by the potential
9 alternative.

10 (Slide change.)

11 COL. LEOHARD: The objectives of this
12 project are to:

13 Provide a launch complex to
14 support a launch vehicle that can carry
15 a large payload;

16 Utilize expendable launch vehicle;

17 Provide capability to achieve high
18 altitude orbit;

19 And last, to provide a location
20 that can launch satellites safely into a
21 polar orbit.

22 (Slide change.)

23 COL. LEOHARD: Following the identification
24 of these objectives, conceptual studies identified
25 the components necessary to fulfill the project

1 objectives. These studies resulted in the
2 formulations of the proposed action and the
3 development of its alternatives.

4 The following illustrations show
5 the required project components as developed for
6 the proposed action. They would also apply to the
7 alternatives considered.

8 (Slide change.)

9 COL. LEOHARD: The first of the major
10 project elements is the Titan IV/Centaur space
11 vehicle itself. The vehicle is approximately 204
12 feet long and supports a payload faring of 86 feet
13 in length, giving it the capacity of transporting
14 very large payloads. This is the latest version
15 of the Titan vehicle and is equipped with two
16 upgraded solid rocket motors, a liquid fueled core
17 vehicle, and a Centaur upper stage that allows it
18 to put payloads in the 10,000 pound class into a
19 high earth orbit.

20 (Slide change.)

21 COL. LEOHARD: The next overhead shows an
22 artist's rendering of the configuration of the
23 launch pad. The major elements present on the pad
24 include the mobile service tower, the umbilical
25 tower, the launch mount and launch support

1 structure, the exhaust duct, and the operation
2 support building, propellant storage areas and
3 maintenance structures.

4 The timeline for construction of the
5 proposed action shows that it would take at least
6 four years to build; operations would begin in the
7 fifth year. Facility design and construction would
8 involve planning for and undertaking site grading,
9 road construction, utilities development, and
10 erection of security fencing and operation support
11 building and the launch support structure, as well as
12 carrying out site rehabilitation measures.

13 Design and construction of the ground
14 support systems follows shortly after facility
15 construction begins. The ground support systems are
16 aerospace equipment which includes mobile service
17 tower, the launch mount, the umbilical tower and
18 other support equipment. Beginning somewhere around
19 the start of the fifth year, the facility will be
20 complete and launch preparations would begin.

21 (Slide change.)

22 COL. LEOHARD: As with the construction of
23 any space launch complex, there are also numerous
24 offsite facilities which are required to support
25 launch operations. This overhead shows several of

1 these:

2 The vehicle assembly building;

3 The payload faring receipt and
4 processing facility;

5 The propellant storage area;

6 The solid rocket motor receipt and
7 processing building, where the individual
8 segments of the solid rocket motors would
9 be inspected and sub-assembled prior to
10 transport to the launch pad;

11 And the launch control center.

12 Additional offsite facilities would
13 include utilities necessary to supply electrical
14 power, communications, water and other essential
15 commodities to the launch site.

16 (Slide change.)

17 COL. LEOHARD: Project operations are
18 depicted on the next overhead. Operations would
19 be conducted at a level to support two Titan 1A
20 launches per year, with a capability to surge to
21 three launches in a year.

22 Launch operations include:

23 The delivery, check-out and
24 transportation to the pad of the solid
25 rocket motors;

1 Delivery and erection of the
2 core vehicle;

3 Mating and check-out for the
4 various segments of the vehicle;

5 Erection of the Centaur upper
6 stage;

7 Insertion of the payload;

8 Installation of the payload
9 faring;

10 Vehicle fueling;

11 And vehicle launch.

12 Post launch operations include
13 cleaning the launch pad and refurbishing it in
14 time to support the next scheduled launch.

15 (Slide change.)

16 COL. LEOHARD: As required by NEPA, the
17 Air Force has developed and analyzed a number of
18 alternatives that could achieve the desired
19 mission objectives. The purpose of this exercise
20 is to make certain that the proposed action is not
21 selected without due and deliberate consideration
22 for other methods that might be available to
23 achieve the same goals.

24 (Slide change.)

25 COL. LEOHARD: The range of alternatives

1 analyzed includes the no-action alternative,
2 different launch vehicles, launch locations outside
3 of Vandenberg, and existing and undeveloped launch
4 sites on Vandenberg. Some alternatives were
5 considered and eliminated, since they could not
6 reasonably achieve the goals of the proposed action,
7 or because they would result in equal or greater
8 environmental impacts.

9 If the no-action alternative were
10 pursued, then SLC-7 project would not be developed
11 and the Titan/IV Centaur could not be launched at
12 Vandenberg Air Force Base. It has been determined
13 that this would unacceptably impact national
14 security. Current defense programs rely on our
15 future ability to launch heavy payloads into near
16 earth orbits -- excuse me, polar orbits. Since
17 there are no other space launch vehicles available
18 to meet this mission requirement, there would be
19 no displacement effect to result in environmental
20 impacts elsewhere.

21 (Slide change.)

22 COL. LEOHARD: Other launch vehicles were
23 considered. These include the Space Transportation
24 System, or the shuttle, and the Titan IV NUS, that
25 is, No Upper Stage.

1 (Slide change.)

2 COL. LEOHWARD: The space system is an
3 alternative, but its capacity at Vandenberg is not
4 equivalent to the Titan IV/Centaur. In addition,
5 the use of the space shuttle was eliminated from
6 further consideration since it is not available
7 for launches from Vandenberg, and since launches
8 from Cape Canaveral in Florida cannot safely
9 provide the required near polar orbit.

10 The Titan IV without the upper
11 stage was considered, since it represents the Air
12 Force's largest capacity vehicle currently in use.
13 This alternative was eliminated, however, since
14 the Titan IV without the upper stage cannot
15 achieve the required high earth orbit to combine
16 with the capacity requirements.

17 (Slide change.)

18 COL. LEOHWARD: Alternative launch
19 locations outside of Vandenberg were considered
20 for use by the Air Force to launch the Titan
21 IV/Centaur.

22 (Slide change.)

23 COL. LEOHWARD: Facilities are available
24 for launch of the Titan/IV Centaur from Cape
25 Canaveral Air Force Station; however, this

1 alternative was eliminated from further
2 consideration since near polar orbits cannot be
3 achieved, given the large payload requirements.

4 U.S. Department of Navy maintains a
5 missile test range on Clemente Island, off the
6 coast of Southern California. Use of this range
7 would allow for attainment of the near polar
8 orbits. However, the launch support facilities
9 shown earlier are lacking at this site. The
10 development of the launch site itself and the
11 necessary facilities including power, sewer, water
12 supply, communications and vehicle processing and
13 preparation facilities, would be costly and would
14 result in comparable or greater environmental
15 impact.

16 The State of Hawaii was also
17 evaluated for its capability to support space
18 launch activities. However, Hawaii was eliminated
19 from further consideration as an alternative
20 launch site because the environmental impacts
21 would be greater than those considered at
22 Vandenberg Air Force Base.

23 The proposed action could be
24 accommodated at other islands in the South Pacific
25 that would allow for polar orbit to be achieved;

1 however, necessary support facilities including
2 such items as labor force are scarce commodities
3 on these islands. In addition, an entirely new
4 launch support system would be required, including
5 a launch control center, telemetry and tracking
6 facilities, propellant storage, and vehicle
7 component processing facilities.

8 It is anticipated that the
9 environmental impact from the development of the
10 Titan IV/Centaur Launch Facility in the South
11 Pacific would be similar or greater to those
12 incurred at Vandenberg, due to the additional
13 construction and the remote nature of the
14 locations. Therefore, this alternative was
15 eliminated from further consideration.

16 (Slide change

17 COL. LEOHARD: With the obvious advantages
18 of existing launch support and general capability
19 of obtaining near polar orbits, sites from
20 Vandenberg were identified as reasonable
21 alternatives to the proposed action. The sites
22 identified include some considered and eliminated
23 from further analysis, and some considered in
24 detail.

25 (Slide change.)

1 COL. LEOHWARD: Sites considered and
2 eliminated from further analysis include Launch
3 Complexes 2, 3, 4, and 5.

4 SLC-2 is a small pad currently used
5 by the Delta Rocket Program. Its use would
6 require complete razing and reconstruction to meet
7 the Titan IV/Centaur requirements. In addition,
8 due to its location, SLC-2 cannot safely support
9 near polar orbits with the necessary payload
10 capability.

11 SLC-3 East and West are currently
12 being used to launch Atlas vehicles. Like SLC-2,
13 utilizing SLC-3 would require complete razing of
14 the existing facilities and building new ones,
15 since the existing facilities are too small to
16 support Titan IV/Centaur. In addition, SLC-3 is
17 closer to Lompoc than the proposed site, which
18 would result in higher levels of noise within that
19 community.

20 SLC-4 East is currently being
21 refurbished to accommodate the Titan IV/NUS
22 missions, and SLC-4 West is an operation Titan II
23 facility. These launch complexes will be fully
24 utilized in their existing programs and not
25 available for other uses.

1 (Slide change.)

2 COL. LEOHNARD: From the suite of alternatives
3 considered, those mentioned previously have been
4 eliminated from further consideration as not feasible
5 in support of project requirements, or since
6 environmental impacts would be equal to or greater
7 than the proposed action. This analytical process
8 has resulted in a number of alternatives and will be
9 considered in more detail.

10 (Slide change.)

11 COL. LEOHNARD: The alternatives considered
12 in detail are all located on South Vandenberg and
13 include the proposed Cypress Ridge site --

14 (Slide change.)

15 COL. LEOHNARD: -- as well as Space launch
16 Complex 6 --

17 (Slide change.)

18 COL. LEOHNARD: -- the Boathouse Flats area --

19 (Slide change.)

20 COL. LEOHNARD: -- and the Vina Terrace
21 alternative site.

22 All are located so that near polar
23 launches can be safely achieved and existing
24 offsite facilities and support facilities at
25 Vandenberg can be utilized.

1 (Slide change.)

2 COL. LEOHWARD: The proposed Cypress Ridge
3 site is currently undeveloped and is being
4 utilized for cattle grazing. The site occupies
5 approximately 120 acres of gently sloping marine
6 terrace, approximately one-half mile from the
7 ocean.

8 (Slide change.)

9 COL. LEOHWARD: The SLC-6 alternative site
10 is very different from the others considered in
11 detail, since it is a developed space launch
12 complex already. The SLC-6 complex was originally
13 built in 1970 for the Manned Orbiting Laboratory
14 Program. When constructed, SLC-6 was configured
15 to launch Titan III vehicles. Subsequent to the
16 cancellation of the Manned Orbiting Laboratory
17 Program, SLC-6 was modified to support space
18 launch vehicles -- excuse me, space shuttle launch
19 vehicles. However, primarily due to the 1986
20 Challenger disaster, we have not used SLC-6 for
21 shuttle launches.

22 SLC-6 is a site approximately 180
23 acres in size, located on a westerly sloping
24 terrace, approximately one mile from the ocean.
25 Since it is a developed site, it would be very low

1 vegetation -- there is very low vegetation
2 present.

3 (Slide change.)

4 COL. LEOHWARD: The Boathouse Flats
5 alternative site, like the proposed Cypress Ridge
6 site, is an undeveloped area of approximately 130
7 acres in size. This site, however, is primarily
8 grassland and is much closer to the ocean than the
9 Cypress Ridge site.

10 (Slide change.)

11 COL. LEOHWARD: The Vina Terrace alternative
12 site is also undeveloped and is slightly larger than
13 the Cypress Ridge site, approximately 150 acres.
14 This additional size is necessary since the Vina
15 Terrace area is the steepest topography of the
16 alternatives. This area is vegetated with a mix of
17 grasses and coastal shrub, and at approximately
18 one-and-one-half miles is the furthest from the
19 ocean.

20 (Slide change.)

21 COL. LEOHWARD: After the three alternatives
22 to be addressed in detail were identified, potential
23 environmental impacts from the proposed action and
24 alternatives were analyzed for inclusion in the Draft
25 EIS. This process began with efforts to characterize

1 the existing environment, based upon the issues
2 identified during the scoping process.

3 (Slide change.)

4 COL. LEOHWARD: As you can see, a wide variety
5 of data was gathered to address potential impacts.
6 Intensive surveys of vegetation, wildlife and
7 cultural resources were undertaken by the
8 environmental contractor to support the analytical
9 process. Information to characterize the remaining
10 resources was generated through empirical
11 observations, reviews of existing literature, and
12 consultation with government agencies.

13 (Slide change.)

14 COL. LEOHWARD: After the data that
15 describe the existing environments were gathered,
16 the potential environmental impacts were
17 determined through extensive analytical activities
18 performed by the environmental subcontractor.

19 Mitigation actions to abate
20 potential impacts were developed next. The final
21 step in the environmental evaluation of the
22 proposed action was then to reevaluate the impacts
23 with the mitigation actions included.

24 (Slide change.)

25 COL. LEOHWARD: The illustration in this

1 overhead is of the most important potential
2 environmental impacts that would result during the
3 construction phase of the proposed action.

4 You will note that most of the
5 impacts would result in the project construction,
6 such as those geological in source, vegetation,
7 wildlife and cultural resources. These would
8 result from activities such as earth moving and
9 construction on the site itself. Impacts to water
10 resources and economic benefits would result from
11 the temporary presence of construction personnel
12 within the local communities.

13 (Slide change.)

14 COL. LEOHWARD: The next illustration is
15 an overview of the most important potential
16 impacts that would result from the operations
17 phase. Impacts to health and safety, vegetation,
18 and wildlife are expected to be concentrated in
19 the vicinity of the launch pad. Potential impacts
20 from water resources, socioeconomics, air quality,
21 noise levels, and recreation are expected to occur
22 in the areas around Vandenberg Air Force Base.

23 That concludes the briefing.

24 COL. McSHANE: Thank you, Colonel Leonard.

25 You were invited to fill out an

1 attendance card when you arrived. If you have not
2 filled one out yet, please do so during the short
3 break we're going to have here.

4 Regarding the making of a statement
5 tonight, if we have any elected public officials,
6 I'll call on you first. After that we'll ask for
7 representatives of organizations who want to
8 speak, and then I'll ask for people who are
9 speaking in their individual capacities.

10 If you do not wish to make your
11 public statement tonight or if you have additional
12 comments beyond those that you wish to make
13 orally, you may provide written comments after
14 this meeting or send them to the address provided
15 on the comment sheet.

16 I recognize that some people may
17 wish to make statements on defense policy, nuclear
18 weapons, arms control and fiscal policy at this
19 meeting; however, such comments are best directed
20 to policy makers such as your congressmen and
21 senators. Please limit your comments here tonight
22 to environmental issues.

23 We need to, I guess, move the
24 tables around a little bit, and I need to get the
25 comment cards. We'll take just a couple minutes

1 of recess and we'll get back together.

2 (Brief recess.)

3 COL. McSHANE: Okay, folks, we're ready to
4 start back up.

5 I have a grand total of one
6 individual who wanted to speak to us tonight.

7 Reggie -- I'm sorry, I can't --

8 MR. PAGALING: Pagaling.

9 COL. McSHANE: "Pagaling." Okay.

10 MR. PAGALING: My name is Reggie Pagaling.
11 I live at 633 Eucalyptus Drive, No. 10, in
12 Solvang, California, and I'm associated with the
13 Cultural Heritage Associates, affiliated with the
14 Santa Ynez Indian Reservation.

15 Last night my sister spoke about
16 SLC-6 and SLC-7, this proposed project, and I'd
17 like to reiterate on a number of the same things,
18 however, what we know about the area and what is
19 going on today as we've expressed a number of
20 times.

21 Science is always taking a new turn
22 and those new turns in archaeology are ever changing.
23 Even now that approach and methodology is changing us
24 to a point where we may not even have to excavate.
25 And although we're familiar with some of the

1 archaeologists doing the environmental work, more
2 theories and more different approaches, as to assess
3 the total impact, are upon us at this time.

4 We are the first people of the
5 area, we've adopted this nation, and we're looking
6 forward to continuing working with you. And we
7 realize that defense is a priority, but just like
8 energy is priority, the L & G Plant that was
9 proposed at Point Conception was occupied in the
10 1970s.

11 And I'm not saying that we're going
12 to look to occupy a military base, I mean, that's
13 really ridiculous. However, we do look forward to
14 doing what we can to protect what is left of our
15 heritage. I know I'd like to protect it for my
16 children and my children's children.

[271] 17 The paper this morning read that
18 the Air Force was promising that there was going
19 to be no further encroachment into the southern
20 part of the base. But we know from discussions
21 that this was implied, but I know you always have
22 your options.

[272] 23 And I think one option you still
24 should pursue is the utilization of SLC-6. There,
25 we still see socioeconomic support of the

1 community, providing jobs for people, if and when,
2 that gets implemented and utilized.

3 We mentioned yesterday that it's
4 almost like our heaven; well, it is. It's our
5 sacred lands. We are known as the "Protectors of
6 the Western Gateway," not only among the
7 traditionals here, but in the Hopi legends, in the
8 Navajo nation, and the all the way back to the
9 Seneca in New York. So we look forward to our
10 role in the Indian world, to assuring that we can
11 protect that.

12 We don't want to see Mother Earth
13 destroyed any more and we don't want to desecrate
14 our sacred lands. And at this time I'd really
15 like to ask you to pursue SLC-6 and utilize it,
16 and leave our sacred lands and our Western Gateway
17 alone.

18 Thank you.

19 COL. McSHANE: Thank you.

20 Anybody else?

21 This is your opportunity to make
22 comments about the proposal.

23 There being no further comments,
24 we'll adjourn the meeting.

25 Thank you.

1 (Whereupon the public hearing
2 was concluded at 7:47 p.m.)
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Ellen Q. Bressi

ELLEN Q. BRESSI
Certified Shorthand Reporter

RESPONSES TO COMMENTS RECEIVED AT PUBLIC HEARING
SANTA BARBARA PUBLIC MEETING, AUGUST 31, 1989

Commenter No. 6: Reggie Pagaling, associated with Chumash Cultural Heritage Association,
Santa Ynez Indian Reservation.

Comment No. 271: Further Development on South VAFB

Comment: The paper this morning read that the Air Force was promising that there was going to be no further encroachment into the southern part of the base. But we know from discussions that this was implied, but I know you always have your options.

Response: USAF has no current plans for development, in addition to SLC-7, on South VAFB.

Comment No. 272: Selection of SLC-6

Comment: And I think one option you should still pursue is the utilization of SLC-6.

Response: See Response to Comment No. 126.



3.0 ADDENDA AND ERRATA TO THE DRAFT EIS

The following addenda and errata are applicable to the Draft Environmental Impact Statement, Construction and Operation of Space Launch Complex 7 at Vandenberg Air Force Base, California, July 20, 1989.

Section 1.5.1.2, page 1-10, first paragraph, line 5, at end of sentence insert: "The Marine Mammal Protection Act established a moratorium on the taking of marine mammals and that if it appears that incidental taking of marine mammals would occur, an incidental take permit form NMFS would be required as provided for by Section 101(a)(5) of the Act."

Section 1.5.1.4, page 1-10, change lines 5 and 6: "the Biological Assessment was submitted to USFWS and NMFS concurrently with the Draft EIS." to "the Biological Assessment will be submitted to USFWS and NMFS as available."

Section 1.5.4.1, page 1-14, last paragraph, change: "There is no deadline for attainment of the CAAQS. To date, SBCAPCD has not adopted any ambient air quality standards more stringent than the CAAQS." to "The California Clean Air Act calls for attainment of the CAAQS 'by the earliest possible date.' California air districts not in attainment of ozone, CO, NO₂, and SO₂ standards must reduce emissions of these pollutants and their precursors by five percent per year until standards are attained. SBCAPCD has adopted their own three-minute average hydrogen sulfide standard of 0.6 ppm."

Section 1.5.4.1, page 1-15, Table 1.5.1, add the following footnotes:

"Notes

1. California standards, other than carbon monoxide, sulfur dioxide (1 hour), nitrogen dioxide and particulate matter - PM₁₀, are values that are not to be equaled or exceeded. The carbon monoxide, sulfur dioxide, and particulate matter - PM₁₀ standards are not to be exceeded.
2. National standards, other than ozone and those based on annual averages or annual geometric means, are not to be exceeded more than once a year. The ozone standard is attained when the expected number of days per calendar year with maximum hourly average concentrations above the standard is equal to or less than one.

3. Concentration expressed first in units in which it was promulgated. Equivalent units given in parenthesis are based upon a reference temperature of 25° C and a reference pressure of 760 mm of mercury. All measurements of air quality are to be corrected to a reference temperature of 25°C and a reference pressure of 760 mm mercury (1,013.2 millibar); ppm in this table refers to ppm by volume, or micromoles of pollutant per mole of gas.
4. Any equivalent procedure which can be shown to the satisfaction of the Air Resources Board to give equivalent results at or near the level of the air quality standard may be used.
5. National Primary Standards: The levels of air quality necessary, with an adequate margin of safety to protect the public health. Each state must attain the primary standards no later than three years after that state's implementation plan is approved by the Environmental Protection Agency.
6. National Secondary Standards: The levels of air quality necessary to protect the public welfare from any known or anticipated adverse effects of a pollutant. Each state must attain the secondary standards within a "reasonable time" after the implementation plan is approved by the EPA.
7. Reference method as described by the EPA. An "equivalent method" of measurement may be used but must have a "consistent relationship of the reference method" and must be approved by EPA.
8. Prevailing visibility is defined as the greatest visibility which is attained or surpassed around at least half of the horizon circle, but not necessarily in continuous sectors.
9. At locations where the state standards for oxidant and/or suspended particulate matter are violated. National standards apply elsewhere.
10. Measured as ozone.
11. The annual PM_{10} state standard is based on the geometric mean of all reported values taken during the year. The annual PM_{10} national standard is based on averaging the quarterly arithmetic means. The PM_{10} national standards became effective in July 1987.

12. The primary and secondary TSP national standards were deleted in July, 1987 when the PM₁₀ national standards were promulgated."

Section 1.5.4.1, page 1-16, first paragraph, add the following sentence to end of paragraph: "As mentioned above, areas that do not attain the CAAQS for ozone, CO NO₂, and SO₂ must reduce the emissions of these pollutants and their precursors by five percent per year until attainment is met. Specific AQAPs for attainment of the CAAQS must be submitted to CARB by July 1991."

Section 1.5.4.1, page 1-16, last paragraph add: "The EPA's State Implementation Plan Call (May 1988) for Santa Barbara County requires the County to prepare a new Plan to meet the ozone standard. The Plan will control emissions for the entire county."

Section 1.5.4.2, page 1-17, third paragraph, line 1, change, "emits or controls" to "emits or may emit air contaminants to the atmosphere or controls; " change "air contaminants to the atmosphere." to "air contaminants."

Section 1.5.4.2, page 1-17, third paragraph, line 3, change "regulations, a" to "regulations, an application for a."

Section 1.5.4.2, page 1-17, third paragraph, line 4, change "is issued." to "may be filed with SBCAPCD."

Section 1.5.4.2, page 1-17, last paragraph, line 5, change "(1) meteorological" to "(1) one year of meteorological."

Section 1.5.4.2, page 1-17, last paragraph, line 6, change, "(2) background" to "(2) one year of background."

Section 1.5.4.2, page 1-18, first paragraph, line 1, delete sentence beginning with "By imposition of."

Section 1.5.4.4, page 1-19, first paragraph, line 2, change "descriptive" to representative."

Section 1.5.5.1, page 1-19, lines 1 and 2, change "California Regional Water Quality Control Board. Resolution No. 83-12 and Order No. 83-60" to "California Regional Water Quality Control Board. Order No. 83-60 and Report of Waste Discharge Permit."

Section 1.5.5.1, page 1-19, first paragraph, line 4, delete line beginning with "Resolution No. 83-12."

Section 1.5.5.1, page 1-20, first paragraph, line 1, delete line.

Section 1.5.5.1, page 1-20, first paragraph line 2, delete line.

Section 1.5.5.1, page 1-20, first paragraph, line 3, delete "than 2,500 gallons per day (average daily flow)."

Section 1.5.5.1, page 1-20, first paragraph, line 6, add: "The SLC-7 system would require a Report of Waste Discharge permit for operation."

Section 1.5.5.2, page 1-20, insert this paragraph between the second and third paragraphs:
"Section 313 of the Clean Water Act requires that each department or agency, of any branch of the federal government having jurisdiction over any property or facility, or engaged in an activity resulting, or which may result, in the discharge or runoff of pollutants, shall be subject to, and comply with all federal, state, interstate, and local requirements respecting the control and abatement of water pollution in the same manner, and to the same extent as any non-governmental entity."

Section 1.5.5.3, page 1-20, after the last sentence add: "A report of waste discharge must be submitted to the Regional Board."

Section 1.5.5.6, page 1-21, line 2 after ". . .wastewater treatment units." add "Other provisions of RCRA that may be applicable include Subtitle F, Section 6001 through 6004, Federal Responsibilities; Subtitle H, Section 8002(r), Minimization of Hazardous Waste; and Subtitle I, Regulation of Underground Storage Tanks (USTs) including, but not limited to, Section 9003, Release detection, prevention and correction regulations."

Page 1-22, add new section after Section 1.5.5.8:

"1.5.5.9 Executive Order 11990

"EO 11990 provides that, "Each agency. . .shall take action to minimize the destruction, loss or degradation of wetlands, and to preserve and enhance the natural and beneficial values of wetlands . . .," and that no new construction shall occur in wetlands unless the agency finds that there is "no practicable alternative to such construction and that the proposed action includes all practicable measures to minimize harm to the wetlands which may result from such use."

Page 1-22 add new section after Section 1.5.5.9:

"1.5.5.10 Executive Order 12088

"EO 12088 requires that each Federal agency shall cooperate and consult with the EPA and state/local agencies on the prevention, control, and abatement of environment pollution."

Section 1.5.6, page 1-23, add at end of list:

"• Incidental Take Permit National Marine Fisheries Service."

Section 2.1.3.5, page 2-22, fourth paragraph, lines 6 and 7, change "Safety clear zones determined by these criteria are shown for existing space launch complexes and the proposed SLC-7 in Figure 2.1.2." to "The safety clear zone determined by these criteria for the proposed Cypress Ridge site is shown in Figure 2.1.2."

Section 2.1.4.1, page 2-25, Drawing changed for Figure 2.1.11.

Section 2.2.1.1, page 2-35, line 4, change "cannot safety" to "cannot safely."

Section 2.3.4, page 2-60, second paragraph, line 4, change "(California sea lion, Harbor seal, Northern fur seal, and Guadalupe fur seal)" to "(California sea lion, Harbor seal, Northern fur seal and Northern elephant seal)."

Section 2.3.5, page 2-62, second paragraph, line 6, change "Present estimates anticipate that approximately 250 tons of particulate material (controlled emissions) could be generated" to "Present estimates anticipate that controlled emissions of particulate matter less than 10 microns in diameter (PM₁₀) could amount to 122.4 tons per year (TPY)."

Section 2.3.5, page 2-62, second paragraph, last line, change "4 tons" to "5.2 tons."

Section 2.3.11, page 2-69, third paragraph, line 3 after "Toxic Hazard Corridor" add "(for information regarding the Toxic Hazard Corridor procedure, see Section 3.11.2.1, 1STRAD Safety Procedures.)"

Section 2.3.11, page 2-70, second paragraph, line 3, change "It is expected that an excess skin cancer rate for carcinomas of one to five for one million persons and an excess cancer rate of about two per 10 million persons for melanomas could result from the proposed action." to "It is expected that an excess cancer rate of about five per 100 million persons for melanomas could result from the proposed action."

Section 3.4, page 3-49, first paragraph, lines 4-7, change "Results of the study are included in the SLC-7 Biological Assessment (Environmental Solutions, Inc., 1986), which has been submitted to the USFWS and the NMFS concurrently with this Draft EIS for formal consultation in accordance with Section 7 of the Endangered Species Act and Marine Mammal Protection Act." to "Results of the study are included in the SLC-7 Biological Assessment (Environmental Solutions, Inc. 1989b), which will be submitted to the USFWS and NMFS for formal consultation in accordance with the Marine Mammal Protection Act and the Section 7 of the Endangered Species Act."

Section 3.4.1.3, page 3-53, third paragraph, line 1, change "are used by sea otters" to "are used by sea otters (20 sea otters were observed by USFWS in the Spring of 1989)."

Section 3.4.1.3, page 3-53, sixth paragraph, line 2, change "Solitary Individuals" to "Solitary gray whale individuals."

Section 3.4.2.1, page 3-58, fourth paragraph, line 5, change "or regionally rare or declining amphibians or reptiles are expected to inhabit coastal scrub habitats in the project area." to "the California legless lizard is the only regionally rare or declining amphibian or reptile expected to inhabit coastal scrub habitats in the project area."

Section 3.5.1.1, page 3-67, second paragraph, last line, change "(USAF 1988b)" to "(Chambers 1986)."

Section 3.5.1.2, page 3-71, first paragraph, line 4, change "brought to the area from" to "from coastal, offshore, and."

Section 3.5.1.2, page 3-72, after second paragraph, add: "North Santa Barbara County does not attain the CAAQS for ozone and PM₁₀. Therefore, in accordance with the California Clean Air Act, ozone, PM₁₀, and their precursors are nonattainment pollutants, and SBCAPCD must ensure that their emissions are reduced by 5 percent per year until attainment is met."

Section 3.5.2.2, page 3-76, second paragraph, line 5, delete "nighttime."

Section 3.5.2.2, page 3-76, second paragraph, line 6, delete entire last sentence.

Section 3.6.2.2, page 3-85, line 5, change "A Class II" to "A Class III."

Section 3.9, page 3-102, second paragraph, lines 2-4, change: "Complete details of the literature search and inventory have been submitted concurrently with this Draft EIS to the California Historic Preservation Officer (SHPO), Advisory Council and Santa Ynez Reservation." to "Complete details of the literature search and inventory would be submitted to the California State Historic Preservation Officer (SHPO), Advisory Council, and Santa Ynez Reservation."

Section 4.3.2.3, page 4-30, second paragraph, line 1, change "Temporary disturbance of 50 to 100 mature individuals" to "Temporary disturbance to habitat for 50 to 100."

Section 4.4.1.3, page 4-40, last paragraph, line 1, change "At the most, only one launch per year would occur during the pupping season." to "At the most, only one launch per year would occur during the Harbor Seal pupping season."

Section 4.4.1.3, page 4-41, first paragraph, line 1, change "120 pups" to "120 harbor seal pups."

Section 4.4.1.3, page 4-41, fourth paragraph, lines 6-10, delete "Such a permit"

Section 4.4.2.1, page 4-45, fourth paragraph, lines 3-5, change "The unarmored three-spine stickleback, a federal- and state-listed endangered species, and the tidewater goby, a Category 2 candidate species proposed for federal listing, both occur in Honda Creek." to "The unarmored three-spine stickleback, a federal- and state-listed endangered species, and the tidewater goby, a Federal Category 2 candidate species both occur in Honda Creek."

Section 4.5.2.1, page 4-60, second paragraph, line 3, change "500" to "490."

Section 4.5.2.1, page 4-60, second paragraph, line 7, delete entire last sentence beginning with "EPA 1972). Ground" and replace with "EPA (1972). It is assumed that approximately 50 percent of the total suspended particulate matter is emitted as particulate matter less than 10 microns in diameter (PM₁₀). Total PM₁₀ emissions from construction activities at SLC-7 are expected to be approximately 122.4 tons per year."

Section 4.5.2.1, page 4-66, third paragraph, last line, add "It is estimated that approximately 5.2 tons of PM₁₀ would be emitted during the modification of SLC-6."

Section 4.5.4.4, page 4-75, second paragraph, line 7, at end of sentence: "This translates to a risk level of five per 100 million persons." add: "for melanomas."

Section 4.6.2.1, page 4-81, second paragraph, line 5, delete line.

Section 4.6.2.1, page 4-81, second paragraph, line 6, delete line.

Section 4.6.2.1, page 4-81, second paragraph, line 7, delete line.

Section 4.6.2.1, page 4-81, third paragraph, line 1, delete "per Resolution 83-12."

Section 4.6.2.1, page 4-82, second paragraph, line 3, change "Lompoc Class II Landfill" to "Lompoc Class III landfill."

Section 4.6.3.2, page 4-90, first paragraph, line 4, change "or the Class II landfill" to "or the Class III landfill."

Section 4.6.4, page 4-94, after last paragraph, add: "If the U.S. Air Force discovers evidence of hazardous substances contamination in the future, it will promptly notify the EPA, and will comply with all applicable requirements of CERCLA/SARA and the National Contingency Plan (NCP). Further, if CERCLA hazardous substances are discovered at the project sites, no construction will occur until the requirements of CERCLA/SARA and the NCP have been fully satisfied."

"The U.S. Air Force will coordinate with appropriate state and local regulatory agencies to determine their concerns on the identification, assessment, or cleanup of hazardous substances or hazardous waste."

Chapter 8.0, page 8-2, add; "Chambers Group, Inc., 1986, Draft EIR/EIS, Proposed Arco Coal Oil Point Project, Volume I and Appendix 6 - Terrestrial Biology, SCH No. 84011105, SLC No. EIR-401, SBC No. 86-EIR-12, U.S. Army COE Permit Appl. No. 85-047-RC, September."

Insert on page 8-13, (above existing USAF, 1982a, and change existing 1982a and 1982b to: USAF 1982b and USAF 1982c) insertion to read "USAF 1982a Supplemental water study for Vandenberg Air Force Base, California, Task Ib, review of water supply alternatives. March."

TABLE B.11
SPECIALLY PROTECTED MARINE SPECIES

Page 1 of 1

<u>SPECIES</u>	<u>FEDERAL STATUS</u>	<u>CALIFORNIA STATE STATUS</u>
REPTILES		
<i>Deremochelys coriacea</i> leather-back sea turtle	Endangered	None
<i>Caretta caretta</i> loggerhead sea turtle	Threatened	None
<i>Chelonia mydas</i> green sea turtle	Threatened	None
<i>Lepidochelys olivacea</i> Pacific Ridley sea turtle	Threatened	None
MAMMALS		
<i>Eubalaena glacialis japonica</i> Pacific right whale	Endangered	None
<i>Eschrichtius robustus</i> gray whale	Endangered	None
<i>Balaenoptera musculus</i> blue whale	Endangered	None
<i>Balaenoptera physalus</i> fin whale	Endangered	None
<i>Balaenoptera borealis</i> sei whale	Endangered	None
<i>Megaptera novaeangliae</i> humpback whale	Endangered	None
<i>Physeter catodon</i> sperm whale	Endangered	None
<i>Arctocephalus townsendi</i> Guadalupe fur seal	Threatened	Rare, Protected
<i>Enhydra lutris</i> California sea otter	Threatened	Protected
<i>Callorhinus ursinus</i> northern fur seal	Depleted	None

Source: Woodhouse 1988.

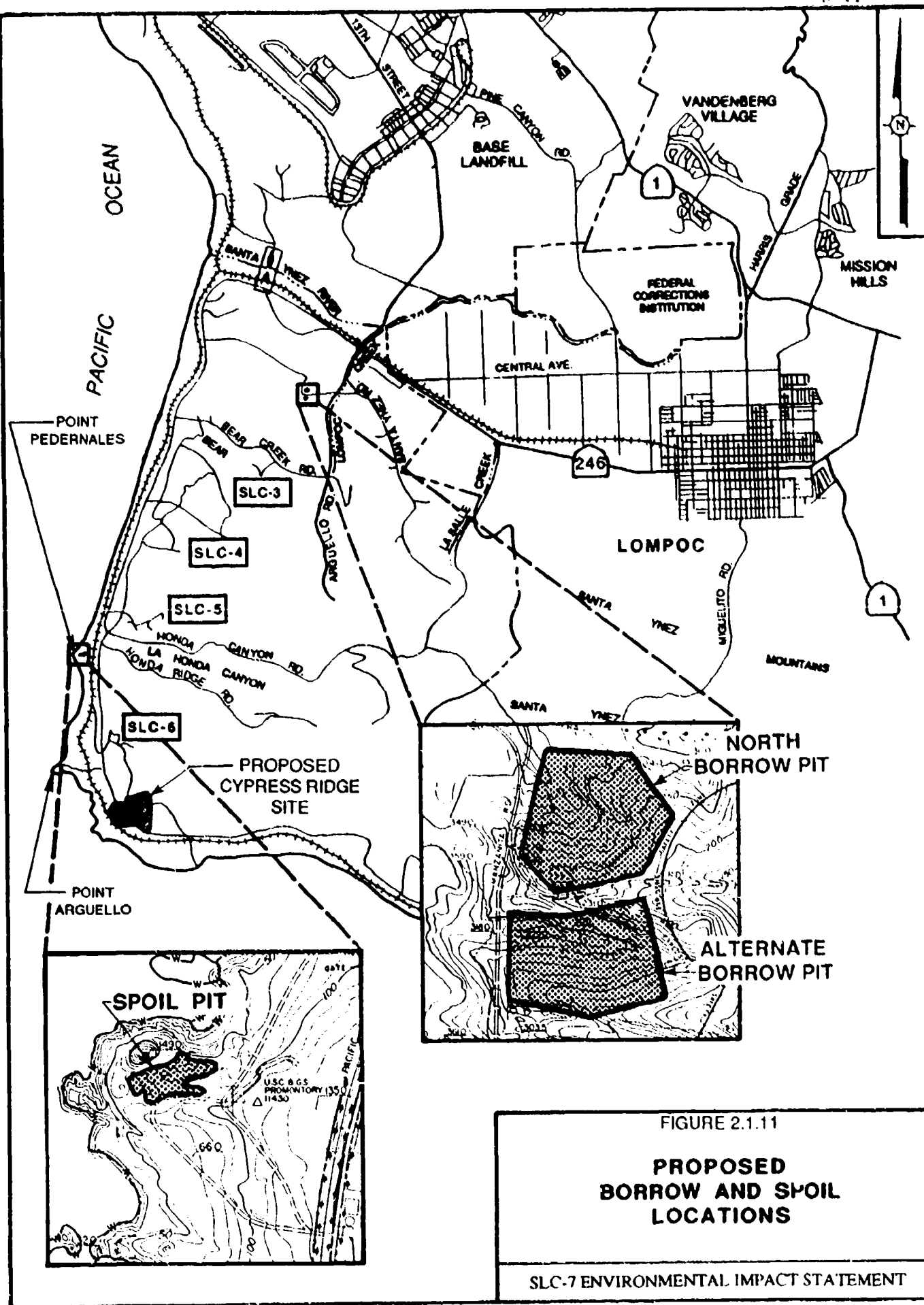
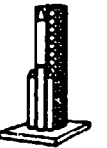


FIGURE 2.1.11

PROPOSED BORROW AND SPOIL LOCATIONS



4.0 LIST OF PREPARERS

This Final Environmental Impact Statement has been prepared by Environmental Solutions, Inc. for the Department of the Air Force, Space Systems Division. Environmental Project Manager John R. Edwards of the Air Force Environmental Planning Division (SSD/DEV) also provided information and assistance in preparing this draft report.

U.S. Air Force, Space Systems Division

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Environmental Project Manager

M.S. Environmental Engineering, 1976, University of Southern California

B.S. Zoology, 1973, University of California, Los Angeles

Eleven years experience as an environmental engineer and project manager for various projects including:

- Environmental Assessments and Environmental Impact Statements.
- Air Pollution Control.
- Hazardous Waste Treatment.
- Permits for projects which include the U.S. Air Force Space Shuttle, radar stations, and missile programs.

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Ph.D. Civil Engineering, 1978, University of Southern California

M.S. Civil Engineering (Environmental), 1973, University of Maryland

B.S. Civil Engineering, 1971, University of Maryland

Ten years of experience as project engineer and project manager for various projects including:

- Environmental Assessments.
- RCRA Part B compliance documentation.
- Surface and ground water quality assessments.
- Waste Discharge Requirement Reports for the STS Power Plant and Space Shuttle Launch Pad, Vandenberg Air Force Base (VAFB).
- Management and engineering activities associated with MX and Assembly Test and System Support construction surveillance at VAFB, hazardous waste inventory and assessment for RCRA Part A at VAFB, RCRA Part B preparation for Kirkland Air Force Base, and RCRA Part B compliance evaluation for radioactive waste for the Waste Isolation Pilot Plant for the DOE.

TIM C. LASSEN

Project Manager

B.S. Civil Engineering, 1970, Purdue University

P.E. State of California, 1983

Eleven years of experience in environmental management and engineering activities including:

- Environmental Assessments and Permitting.
- Project Director on landfill project for major rail transportation company.
- Project Manager on hydrogeological assessments, remedial action plan development, and cleanup of contaminated soil and ground water.
- Manager, Environment and Hazardous Materials Control for major rail transportation company. Responsible for the following programs: Principal reviewer of Environmental Assessments (EA) and Environmental Impact Reports (EIR), environmental audits, spill response and prevention, hazardous waste management, industrial wastewater treatment, state and CERCLA Superfund, underground tank inventories and compliance, air quality, asbestos, and noise abatement programs.

DANIEL M. EVANS

Project Manager

M.S. Planning, 1985, University of Tennessee

B.A. Political Science, 1976, Knox College

Eleven years of experience in environmental impact analysis and project management including:

- Environmental Assessments and Environmental Impact Statements.
- Development and implementation of methodology to gather socioeconomic data used in microcomputer analytical system for Dam Safety Risk Analysis Regional Data Development for the U.S. Army Corps of Engineers.
- Participated in preparation of Environmental Analyses for small Hydropower Developments for the Federal Energy Regulatory Commission.
- Part of an interdisciplinary Oak Ridge National Laboratory team "Analyzing Water Resources Issues for the 1980s."
- Management of environmental impact analysis team for the final Environmental Assessment for the proposed Northeast Regional Communications Facility.
- Regional Economic/Environmental Policy Analysis for the Department of Energy, included environmental implications of regional industrial shifts, regional fuel consumption forecasting for the manufacturing sector, and analysis of product mix and energy intensity as determinants of energy consumption.

CAROLYN E. TRINDLE

Assistant Project Manager

M.A. Business Administration, 1981, Pepperdine University, California

M.A. Secondary Education, 1974, University of Missouri, Kansas City

Bachelor of Journalism, 1965, University of Missouri, Columbia

Twelve years of experience in project management and environmental planning for various projects including:

- Environmental Assessments and Environmental Impact Reports for major mining and energy development projects.
- Socioeconomic and planning documents for proposed industrial projects and military installations.
- Environmental documents for establishing the F/A-18A aircraft at Kaneohe Bay, Oahu, Hawaii, and for impacts of constructing satellite earth stations in urban Southern California locales.
- Permitting for major mining projects.

PETER HAYDEN

Assistant Project Manager

B.S. Mathematics, 1980, University of the Pacific, Stockton, California

Eight years of experience in air quality research including:

- Development of emissions inventories.
- Conducting and managing air quality studies to assess regulatory compliance of existing and proposed facilities.
- Conducting air quality monitoring and modeling studies to determine ambient pollution concentrations in the vicinity of industrial and government facilities.

DAVE BROWN

Project Planner

M.S. Geography, 1984, University of California, Riverside

B.S. Geography, 1980, University of California, Riverside

Project management activities include:

- Principal author of EIS/EIR for Bureau of Land Management gold mine project.
- Management of EIRs and EAs for commercial, industrial, and residential projects. Supported environmental documentation through public and agency reviews and public hearing processes.
- Conducted environmental technical analyses, including land use consistency and compatibility, aesthetics, socioeconomic, infrastructure requirements and availability, and fiscal impact.

GREGORY S. KINDT

Project Engineer

B.S. Chemical Engineering, 1985, South Dakota School of Mines and Technology

Participated in engineering activities in support of:

- Environmental Assessment (EA).
- Air quality, hazardous waste, and risk assessments.
- Regulatory and hazardous emissions reviews for gold mine.

VIRGINIA M. CARMICHAEL

Senior Environmental Scientist/Planner

B.S. Geology/Biology, 1979, Metro State College

Seven years of experience in geology and environmental management.

- Principal author of Reclamation Plan for Bureau of Land Management gold mine project.
- Conducted environmental analyses for varied types of projects, including transportation corridors, jail sites, airports, residential developments, pipeline projects, commercial developments, landfills, and reservoirs.
- Managed federal minerals program at various duty sites.

PAUL COLLINS

Wildlife Consultant

M.A. Zoology, 1982, University of California, Santa Barbara

B.A. Zoology, 1973, University of California, Santa Barbara

- Wildlife consultant on six major EIS/EIRs for offshore oil developments in Santa Barbara County.
- Associate Curator of Vertebrate Zoology, Santa Barbara Museum of Natural History.

DIANA HICKSON

Project Botanist

M.A. Geography, 1987, University of California, Santa Barbara

B.A. Geography, 1983, University of California, Santa Barbara

- Compilation of fire history at VAFB.
- Survey of VAFB vegetation communities for Basewide Biological Monitoring Program.

CHESTER KING

Project Archaeologist

Ph.D. Anthropology, 1981, University of California, Davis

M.A. Anthropology, 1966, University of California, Los Angeles

B.A. Anthropology, 1964, University of California, Los Angeles

- Completed Ethnohistory of VAFB.
- Principal investigator for cultural resources on several EIR/EISs.
- Author of numerous articles on North American Indians, including the Chumash who once populated the areas now occupied by South VAFB.

CHARLES D. WOODHOUSE, JR.

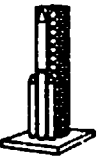
Marine Biologist

Ph.D. Zoology and Oceanography, University of British Columbia

M.A. Marine Biology, 1964, University of Oregon

B.A. Biology, 1962, University of California, Santa Barbara

- Consultant to Marine Mammal Commission, Washington D.C.
- Deputy Director of Santa Barbara Museum of Natural History/Curator of Vertebrate Zoology.
- Program Director, Oceanic Biology Program, Office of Naval Research, Washington, D.C. 1971 to 1974.
- Principal Coordinator of natural resources study on the Channel Islands National Monument for National Park Service, 1978 to 1979.



5.0 REFERENCES

- Bowles, A.; Stewart, B. S. 1980. Disturbances to pinnipeds and birds of San Miguel Island, 1979-1980. In: Jehl, J. R. ; Cooper, C. F. , eds. Potential effects of Space Shuttle sonic booms on the biota and geology of the California Channel Islands: research reports. Prepared by the Center for Marine Studies, San Diego State University, in cooperation with Hubbs/Sea World Research Institute. Prepared for USAF, Headquarters, Space Division, El Segundo, California. Tech Rep 80-1. Section 7, pp. 99-137.
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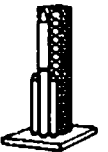
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6.0 FINAL EIS MAILING LIST

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Washington, DC

Advisory Council for Historic Preservation
Western Office of Project Review
Golden, CO
Attn: Director

The American Cetacean Society
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San Pedro, CA
Attn: Millie Payne, Executive Secretary

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Raymond Bellrose
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California Regional Water Quality Control Board
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California Wildlife Trust
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City of Lompoc
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Attn: Karl Braun, Mayor Pro-Tem

City of Lompoc
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City of Lompoc
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La Purisima Mission Association
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Lompoc General Plan Advisory Committee
Lompoc, CA

Lompoc Record
Lompoc, CA

Lompoc Valley Chamber of Commerce
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Lompoc Valley General Plan Advisory Committee
Lompoc, CA
Attn: Jane Green, Secretary

Marine Mammal Commission
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Martin Marietta Corp.
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Martin Marietta Corp.
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Santa Barbara County Board of Supervisors
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Santa Maria Times
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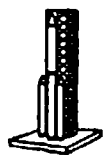
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Roger Zimmerman
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Chapter 7.0

DOCUMENTATION OF DRAFT EIS PUBLIC HEARINGS

**7.0 DOCUMENTATION OF DRAFT
ENVIRONMENTAL IMPACT STATEMENT
PUBLIC HEARINGS**

1. The material in this section is provided to document the Environmental Impact Analysis Process (EIAP) and its consistency with the National Environmental Policy Act (NEPA) as implemented by the Regulations of the President's Council on Environmental Quality (CEQ) (40 CFR Parts 1500 - 1508). In particular, this section demonstrates consistency with CEQ requirements for public involvement (40 CFR Part 1506.6). Documentation of public notice is shown in the Federal Register Notice of Availability of Draft EIS, mailing list for notification of Draft EIS public hearings, notification of Draft EIS public hearings, and newspaper notification and publication dates of notifications for Draft EIS public hearings.
2. The public hearing summary handout, public hearing registration card, written statement form, and list of attendees and speakers are provided to demonstrate efforts made to involve the public in preparing the Draft EIS. The handouts made available to the public hearings were the same for the hearing at Lompoc, and Santa Barbara, California held on August 30, and 31, 1989, respectively.

7.1 FEDERAL REGISTER NOTICE OF AVAILABILITY OF DRAFT EIS

Applicable: To the power sold to customers as firm peaking power service.

Monthly Rate: Capacity Charge: \$1.85 per kilowatt of the effective contract rate of delivery for peaking power or the maximum amount scheduled, whichever is the greater.

Energy Charge: 5.08 mills per kilowatthour for all energy scheduled for delivery without return.

Adjustments: Billing for unauthorized overruns: For each billing period in which there is a contract violation involving an unauthorized overrun of the contractual obligation for peaking capacity and/or energy, such overrun shall be billed at 10 times the above rate.

[FR Doc. 89-17708 Filed 7-27-89; 8:45 am]

BILLING CODE 6450-61-M

ENVIRONMENTAL PROTECTION AGENCY

(ER-FRL-3622-1)

Environmental Impact Statements; Availability

Responsible Agency: Office of Federal Activities General Information (202) 382-5073 or (202) 382-5075.

Availability of Environmental Impact Statements Filed July 17, 1989 Through July 21, 1989 Pursuant to 40 CFR 1506.9.

EIS No. 890195, Draft, FHWA, CA, I-5/Santa Ana Freeway Widening and Interchanges I-5/CA-22 and I-5/CA-91 Reconstruction, Funding, Cities of Santa Ana, Orange, Anaheim, Fullerton and Buena Park, Orange County, CA, Due: September 20, 1989, Contact: Michael Cook (916) 551-1310.

EIS No. 890198, Draft, FAA, TX, New Austin Airport Construction, Airport Layout Plan and Location Approval, Cities of Austin and Manor, Travis County, TX, Due: September 11, 1989, Contact: Mo Keane (817) 824-5608.

EIS No. 890197, Final, USA, UT, Tooele Army Depot On-Site Facility for Disposal of Stockpiled Chemical Agents and Munitions, Construction and Operation, Tooele County, UT, Due: August 28, 1989, Contact: Lewis Walker (202) 695-7824.

EIS No. 890198, Final, FHWA, OR, North Marine Drive Improvement, I-5 to Rivergate Industrial District, Funding and Section 10/404 Permits, Multnomah County, OR, Due: August 28, 1989, Contact: Dale Wilken (503) 399-5749.

EIS No. 890199, DSuppl, EPA, CA, City of Los Angeles Wastewater Treatment Facilities Plan, Construction/Operation, Updated Information, Grant, Los Angeles County, CA, Due: September 14, 1989, Contact: Susan Johnson (415) 974-8288.

EIS No. 890200, Final, FHWA, ND, MN, I-94 Corridor Improvements, Horace

Road to US 75, Funding COE Section 404 Permit and U.S. Coast Guard Permit, Cass County, ND and Clay County, MN, Due: August 28, 1989, Contact: John Kliethermes (701) 250-4202.

EIS No. 890201, Final, AFS, ID, Wing Creek-Twenty Mile Timber Sale and Road Construction, Geographic Display Area Management Plan, Implementation, Nezperce National Forest Land and Resource Management Plan, Elk City and Clearwater Ranger Districts, Idaho County, ID, Due: August 28, 1989, Contact: Thomas Kovalicky (208) 983-1950.

EIS No. 890202, DSuppl, BLM, MT, Powder River I Regional Federal Coal Tracts, Leasing, Assessment of Economic, Social and Cultural Impacts on the Northern Cheyenne and Crow Indian Tribes, Yellowstone, Big Horn and Rosebud Counties, MT, Due: September 28, 1989, Contact: Loren Cabe (406) 255-2923.

EIS No. 890203, Draft, APH, AL, AZ, AR, CA, FL, GA, KS, LA, MS, MO, NM, NC, OK, SC, TN, TX, VA, PRO, National Boll Weevil Cooperative Control Program, Implementation and Funding, AL, AZ, AR, CA, FL, GA, KS, LA, MS, MO, NM, NC, OK, SC, TN, TX, VA, Due: September 11, 1989, Contact: Mike Werner (202) 436-8565.

EIS No. 890204, Draft, USAF, CA, Space Launch Complex 7 (SLC-7) Construction and Operation, South Vandenberg Air Force Base, Santa Barbara County, CA, Due: September 11, 1989, Contact: John Edwards (213) 643-0934.

EIS No. 890205, Final, SFW, KY, TN, Reelfoot Lake Water Level Management Plan, Implementation, Fulton County, KY and Lake and Obion Counties, TN, Due: August 28, 1989, Contact: John Oberheu (404) 331-3594.

Amended Notices: EIS No. 890145, DSuppl, AFS, AK, Alaska Pulp Long-Term Timber Sale/Road Construction, Phase II 1981-88 and 1986-89 Operating Plan Amendments, Meed Bay, Freshwater-Whitestone, Corner Bay, and Kuia Island Analysis Areas, Tongass National Forest, AK, Due: August 15, 1989, Contact: James Pierce (907) 588-8871.

Published FR 7-21-89—Incorrect due date.

Dated: July 25, 1989.

Richard E. Sanderson,

Director, Office of Federal Activities.

[FR Doc. 89-17709 Filed 7-27-89; 8:45 am]

BILLING CODE 6550-50-M

(ER-FRL-3622-2)

Environmental Impact Statements and Regulations; Availability of EPA Comments

Availability of EPA comments prepared July 10, 1989 through July 14, 1989 pursuant to the Environmental Review Process (ERP), under section 309 of the Clean Air Act and section 102(2)(c) of the National Environmental Policy Act as amended. Requests for copies of EPA comments can be directed to the Office of Federal Activities at (202) 382-5076.

An explanation of the ratings assigned to draft environmental impact statements (EISs) was published in FR dated April 7, 1989 (54 FR 15006).

Draft EISs

ERP No. D-AFS-J61076-CO, Rating EO2, Lake Catamount Resort Construction, Special Use Permit, 404 Permit, Routt National Forest, Routt County, CO.

Summary: EPA feels this document does not fully explore all feasible and practicable alternatives which would reduce project impacts to waters of the United States, including wetlands. EPA requested additional information related to proposed mitigation.

ERP No. D-AFS-J65152-MT, Rating EO2, Upper Yaak River Drainage Area, Timber Harvest and Road Construction/Reconstruction, Kootenai National Forest, Lincoln County, MT.

Summary: EPA supports selection of alternatives 7 and 8 of the draft EIS over alternative 6 (preferred alternative) because they provide a greater degree of protection to the Forests' resources. EPA believes that the proposed timber harvest level has the potential to adversely impact water quality, soil productivity, and riparian areas. None of the alternatives in the draft EIS appear to be consistent with the Forest Plan standards and guidelines for water quality protection and road density in grizzly habitat.

ERP No. D-FHW-E40719-SC, Rating EO2, Northern Outer Bypass Construction, US 501 to US 17, Funding, COE Section 10 and 404 Permits and US Coast Guard Section 9 Permit, City of Conway, Horry County, SC.

Summary: EPA has strong environmental reservations concerning the projected loss of several hundred acres of forested wetlands and recommends that alternative alignments be re-examined to reduce anticipated wetland destruction. Detailed compensation plans to offset unavoidable wetland losses also need to

7.2 NEWS RELEASE FOR DRAFT EIS PUBLIC HEARINGS

August 1, 1989

**AIR FORCE ANNOUNCES PUBLIC
HEARINGS ON VANDENBERG AIR FORCE BASE
SPACE LAUNCH PROJECT**

LOS ANGELES AIR FORCE BASE, Calif. -- Officials at Headquarters Air Force Space Systems Division announced here today that public hearings will be held to provide the public an opportunity to comment on the Draft Environmental Impact Statement for the Space Launch Complex 7 (SLC-7) project at Vandenberg Air Force Base.

These meetings are open to all interested individuals, groups, and government agencies. They will be held at the following times and places:

1. August 30, 1989, 7:00 p.m.
Grossman Gallery of the Lompoc Public Library
501 East North Avenue
Lompoc, CA
2. August 31, 1989, 7:00 p.m.
Santa Barbara Superintendent of Schools Auditorium
4400 Cathedral Oaks Road
Santa Barbara, CA

The U.S. Air Force is proposing construction and operation of a new space launch complex (SLC-7) for the Titan IV/Centaur launch vehicle at Vandenberg. The proposed facility represents the latest modification to the Titan program and is a continuation of the USAF Space Launch program at this Santa Barbara County base.

During the hearing, individuals are limited to 5-minute presentations and representatives of groups to 10 minutes. If a more lengthy statement is necessary, the speaker is asked to provide a written copy and summarize it orally according to the above time limits.

Written statements may be submitted to:

Headquarters Space Systems Division
SSD/DEV
ATTN: Mr. John Edwards
P. O. Box 92969
Los Angeles, CA 90009-2960

7.3 MAILING LIST FOR NOTIFICATION OF DRAFT EIS PUBLIC HEARINGS

**MAILING LIST FOR NOTIFICATION
OF DRAFT EIS PUBLIC HEARINGS**

Advisory Council on Historic Preservation
Washington, DC

Advisory Council for Historic Preservation
Western Office of Project Review
Golden, CO
Attn: Director

Mike Anderson
Lompoc, CA

John M. Baucke
Bixby Ranch Company
Santa Barbara, CA

Raymond Bellrose
Lompoc, CA

Don Benn
Santa Barbara, CA

Jennifer Bessette
Lompoc, CA

Anthony Blackett
Lompoc, CA

Board of Supervisors
Santa Barbara, CA
Attn: Chairman

Kenneth C. Bornholdt
Bixby Ranch Company
Los Angeles, CA

Steve Bridge
Lompoc, CA

Walter B. Burnett
Lompoc, CA

California Coastal Commission
San Francisco, CA
Attn: Peter Douglas

California Department of Fish and Game
Sacramento, CA

California Native Plant Society
San Luis Obispo, CA
Attn: President, San Luis Obispo Chapter

California Regional Water Quality Control
Board
Central Coast Region
San Luis Obispo, CA
Attn: William R. Leonard, Executive Officer

California State Historic Preservation Office
Sacramento, CA
Attn: SHPO

California Wildlife Trust
Hermosa, CA
Attn: Edward S. Loosli, Director

Tony Cayabyab
Lompoc, CA

Central Coast Indian Council
Paso Robles, CA
Attn: Director

City of Lompoc
City Hall
Lompoc, CA
Attn: Gene Stevens, Councilman

City of Lompoc
City Hall
Lompoc, CA
Attn: Jeremy Graves, Associate Planner

City of Lompoc
City Hall
Lompoc, CA
Attn: Jim Smith, Councilman

City of Lompoc
City Hall
Lompoc, CA
Attn: Karl Braun, Mayor Pro-Tem

City of Lompoc
City Hall
Lompoc, CA
Attn: Marvin Loney, Mayor

City of Lompoc
City Hall
Lompoc, CA
Attn: William S. Mullins, Councilman

City of Lompoc
Department of Community Development
Lompoc, CA
Attn: King Leonard, Planning Director

City of Santa Barbara
Community Development Department
Santa Barbara, CA
Attn: Director

City of Santa Maria
Santa Maria, CA
Attn: Curtis J. Tunnel, Councilman

City of Santa Maria
Santa Maria, CA
Attn: George S. Hobbs, Jr., Mayor

City of Santa Maria
Santa Maria, CA
Attn: James A. May, Councilman

City of Santa Maria
Santa Maria, CA
Attn: Robert Orach, Councilman

City of Santa Maria
Santa Maria, CA
Attn: Thomas B. Urbanske, Mayor Pro-Tem

City of Santa Maria
Department of Community Development
Santa Maria, CA

Paul Collins
Santa Ynez, CA

Judy Y. Cooper
Lompoc, CA

Laura M. Cooper
Lompoc, CA

County of Santa Barbara
Resource Management Department
Santa Barbara, CA

Alan Cranston, U.S. Senator
Los Angeles, CA

S.R. Daurell
Santa Maria, CA

Ed Davis, State Senator
(19th District)
Northridge, CA

George Deukmejian, Governor
Sacramento, CA

Darlene Dial
Santa Maria, CA

Terry Dial
Santa Maria, CA

David A. Dimalty
Lompoc, CA

Nicole M. Donla
Lompoc, CA

David A. Dunaltz
Lompoc, CA

Andrew N. Dunlap
Lompoc, CA

Robert Dwyer
Lompoc, CA

Clay Easterly
Knoxville, TN

William H. Ehorn, Superintendent
U.S. Department of the Interior
National Park Service
Channel Islands National Park
Ventura, CA

Elders Council of the Santa Ynez Reservation
c/o Elaine Schneider
Santa Ynez, CA

Charles R. Eshelman
Goleta, CA

Federal Aviation Administration
Regional Headquarters
Worldway Postal Center
Los Angeles, CA

Scott Feirn
Lompoc, CA

Fluor Daniel
Irvine, CA
Attn: E.R. Phillips

Gary Gault
Santa Maria, CA

General Dynamics
San Diego, CA
Attn: Harvey Jewett

Robert Gibson
Paso Robles, CA

Tom Gooch
Lompoc, CA

Governor's Office of Planning Research
Sacramento, CA

Russell G. Guiney, District Superintendent
California Department of Parks and
Recreation
La Purisima Mission District
Lompoc, CA

Jerold Haber
NTS Engineering
Los Angeles, CA

Fred Halneka
Lompoc, CA

Gary Hart, State Senator
(18th District)
Santa Barbara, CA

Kathryn L. Harter
Lompoc, CA

Health Care Services
Environmental Health Services
Santa Barbara, CA
Attn: Ben Gale, Director

Health Care Services
Lompoc, CA
Attn: Larry Bishop, Supervisor

Diana Hickson
WESCO
Novato, CA

Historical Society (Lompoc Valley)
Lompoc, CA

Historical Society of Santa Maria
Santa Maria, CA
Attn: Ted A. Bianchi, Sr.

Hollister Ranch Owners' Association
Gaviota, CA
Attn: Alvin J. Remmenga

DeWayne Holmdahl, Supervisor
4th District
Lompoc, CA

Hubbs-Sea World Research Institute
San Diego, CA

Interagency Archaeological Services Branch
National Park Service Western Region
San Francisco, CA

George Johnson
Lompoc, CA

Dominic Keen
Lompoc, CA

Michael E. Kelley
Lompoc, CA

Mike Kelly
Isla Vista, CA

Chester King
Topanga Canyon, CA

Ray Kunze
Lompoc, CA

Robert Lagomarsino, Congressman
(19th District)
Santa Barbara, CA

La Purisima Mission Association
Lompoc, CA

La Purisima Mission State Park
Lompoc, CA

Larry Lane
Lompoc, CA

League of Women Voters
Santa Barbara, CA
Attn: Marty Blum, President

Lockheed Space Operations Company
Lompoc, CA
Attn: Steve Bridge

Lompoc General Plan Advisory Committee
Lompoc, CA

Lompoc Record
Lompoc, CA

Lompoc Valley Chamber of Commerce
Lompoc, CA
Attn: Lee Bohlmann, Executive Director

Lompoc Valley General Plan Advisory
Committee
Lompoc, CA
Attn: Jane Green, Secretary

Los Angeles Times
Santa Barbara Edition
Santa Barbara, CA

Marine Mammal Commission
Washington, DC

Martin Marietta Corp.
DE00A
Vandenberg Air Force Base, CA
Attn: Robbie Robinson

Martin Marietta Corp.
Vandenberg Air Force Base, CA
Attn: Mel Wheeler

Doyle McDonald
TAD Corps
Washington, D.C.

McDonnell Douglas
Bill Sobszak
Vandenberg Air Force Base, CA

Eldon Milner
Martin Marietta Denver Aerospace
Denver, CO

Toru Miyoshi, Supervisor
5th District
Santa Maria, CA

Dr. Mario J. Molina
Jet Propulsion Laboratory
California Institute of Technology
Pasadena, CA

Mark D. Mopson
Lompoc, CA

Larry Myers, Executive Secretary
Native American Heritage Commission
Sacramento, CA

National Audubon Society
La Purisma Chapter
Lompoc, CA
Attn: Debra Argel, President

David Nert
Lompoc Record
Lompoc, CA

Office of the Mayor
Santa Barbara City Hall
Santa Barbara, CA

James Peach
Isla Vista, CA

Pillsbury, Madison & Sutro
Washington, DC
Attn: Gen. Sugiyama

Planning and Conservation League
Sacramento, CA
Attn: Larry Moss

Deborah Pontifex
SBCAPCD
Santa Barbara, CA

John Riughnuser
Lompoc, CA

Donn Robertson
Lompoc, CA

K.K. Rodriguez
Lompoc, CA

Richard Roop
Oak Ridge National Laboratory
Oak Ridge, TN

Richard Runyon
Environmental Health Services
Lompoc, CA

Barbara Russell
Avila Beach, CA

San Luis Obispo Telegram - Tribune
San Luis Obispo, CA

Santa Barbara County Flood Control
and Water Agency
Santa Barbara, CA
Attn: James Stubchaer, Engineer-Manager

Santa Barbara County Parks Department
Santa Barbara, CA
Attn: Mike Pahos, Director of Parks

Santa Barbara County Air Pollution Control
District
Santa Barbara, CA
Attn: James M. Ryerson,
Air Pollution Control Officer

Santa Barbara County Board of Supervisors
Santa Barbara, CA
Attn: Chairman

Santa Barbara County Board of Supervisors
Santa Barbara, CA
Attn: David M. Yager, Supervisor, 1st
District

Santa Barbara County Board of Supervisors
Santa Barbara, CA
Attn: Thomas Rogers, Supervisor, 2nd
District

Santa Barbara County Board of Supervisors
Santa Barbara, CA
Attn: William B. Wallace, Supervisor, 3rd
District

Santa Barbara County
Cities Area Planning Council
Santa Barbara, CA
Attn: Gerald R. Lorden, Executive Director

Santa Barbara County Office of
Disaster Preparedness
Hazardous Materials Coordinator
Santa Barbara, CA
Attn: Susan Strachan

Santa Barbara News
Santa Barbara, CA

Santa Maria Times
Santa Maria, CA

Santa Maria Valley Chamber of Commerce
Santa Maria, CA
Attn: Charlie Jackson, Executive Director

Santa Maria Valley Developers, Inc.
Santa Maria, CA

Santa Ynez Indian Reservation
Business Council
Santa Ynez, CA
Attn: James Pace, Chairman

Scenic Shoreline Preservation Conference
Santa Barbara, CA
Attn: Mr. Fred Eissler

Elaine Schneider
Santa Maria, CA

Eric Seastrand, State Assemblyman
(29th District)
San Luis Obispo, CA

Donald Shaw
White Oak, PA

Sierra Club (Arguello Group)
Lompoc, CA
Attn: Connie Geiger

Sierra Club National Headquarters
San Francisco, CA

Domenic Signorelli,
Lompoc Unified Schools
Lompoc, CA

Maria Slizys
Lompoc, CA

Aubrey B. Sloan
Santa Maria, CA

Bea Smith
Community Const.
Lompoc, CA

Don D. Smith
Lompoc, CA

Steve Sorkin
Goleta, CA

Steen W. Steensen
Lompoc, CA

Steve Strachan
Lompoc, CA

Superintendent of Schools
Santa Barbara, CA
Attn: William J. Cirone

Sverdrup Corporation
St. Louis, MO
Attn: Lieu Smith

The American Cetacean Society
National Headquarters
San Pedro, CA
Attn: Millie Payne, Executive Secretary

The Resources Agency of California
Office of the Secretary
Sacramento, CA

Russ Thompson
Lompoc, CA

S.M. Times
Santa Maria, CA

United Chumash Central Counsel
Santa Barbara, CA

U.S. Army Corps of Engineers
Attn: John Harris, CESP-K-ED-M
Sacramento, CA

U.S. Coast Guard
Marine Safety Division
Long Beach, CA
Attn: U.S. Coast Guard Chief

U.S. Department of Agriculture
U.S. Forest Service
Santa Lucia Ranger District
Santa Maria, CA
Attn: Keith Gunther, District Ranger

U.S. Department of Agriculture
Soi! Conservation Service
Santa Maria, CA

U.S. Department of Commerce
National Oceanic and Atmospheric
Administration
National Marine Fisheries Services
Northwest and Alaska Fisheries Center
Seattle, WA

U.S. Department of Commerce
National Oceanic and Atmospheric
Administration
Rockville, MD

U.S. Department of Commerce
National Oceanic and Atmospheric
Administration
National Marine Fisheries Service
Southwest Region
Terminal Island, CA
Attn: E.C. Fullerton, Regional Director

U.S. Department of Commerce
National Oceanic and Atmospheric
Administration
National Marine Fisheries Services
Terminal Island, CA
Attn: Dana J. Seagars, Marine Biologist

U.S. Department of Housing and
Urban Development
San Francisco, CA

U.S. Department of the Interior
Fish and Wildlife Service
Laguna Niguel Field Office
Laguna Niguel, CA
Attn: Nancy M. Kaufman, Field Supervisor

U.S. Department of the Interior
Bureau of Indian Affairs
Central California Agency
Sacramento, CA

U.S. Department of the Interior
Bureau of Land Management
Washington, DC
Attn: Division of Planning and
Environmental Control

U.S. Department of the Interior
Bureau of Land Management
Sacramento, CA
Attn: Planning Division

U.S. Department of the Interior
Office of the Secretary
Washington, DC

U.S. Department of the Interior
Regional Environmental Officer
San Francisco, CA
Attn: Patricia Port

U.S. Department of the Interior
U.S. Fish and Wildlife Service
Western Regional Office
Portland, OR

U.S. Department of Labor
Occupational Safety and Health
Administration
Washington, DC

U.S. Department of Transportation
Washington, DC

U.S. Department of Transportation
San Luis Obispo, CA
Attn: Henry O. Case

U.S. Environmental Protection Agency
Office of Federal Activities
Region IX
San Francisco, CA
Attn: Jacqueline Wyland, Chief

U.S. Environmental Protection Agency
Office of Federal Activities
Region IX
San Francisco, CA
Attn: David Tomjovic

U.S. Environmental Protection Agency
Headquarters
Washington, DC

U.S. Fish and Wildlife Service
Sacramento Endangered Species Office
Sacramento, CA
Attn: Gail C. Kobetich

Frank Ugolini
Channel Islands National Park
Ventura, CA

Tad Weber
Lompoc, CA

Western Regional Office
National Park Service
San Francisco, CA

Dorene Wettck
Lompoc, CA

Pete Wilson, U.S. Senator
Los Angeles, CA

Joe Wisely
Goleta, CA

Charles D. Woodhouse
Santa Barbara, CA

Cathie Wright, State Assemblywoman
(37th District)
Simi Valley, CA

Jimmy Wyest
Lompoc, CA

Michael I. Zeenin
Lompoc, CA

LIBRARY DISTRIBUTION

Buellton Library
Buellton, CA

Goleta Library
Goleta, CA

Lompoc Public Library
Lompoc, CA

Montecito Library
Montecito, CA

Santa Barbara City Library
Central Branch
Santa Barbara, CA

Santa Maria City Library
Santa Maria, CA

Santa Maria City Library
Guadalupe Branch
Guadalupe, CA

Santa Maria City Library
Orcutt Branch
Orcutt, CA

Solvang Library
Solvang, CA

Reference Department
Library
University of California
Santa Barbara, CA

Ventura County Library
E.P. Foster Branch
Ventura, CA

Village Library
Vandenberg Village, CA

7.4 NOTIFICATION OF DRAFT EIS PUBLIC HEARINGS

**DEPARTMENT OF THE AIR FORCE**

HEADQUARTERS SPACE DIVISION (AFSC)
LOS ANGELES AIR FORCE BASE, PO BOX 92960
LOS ANGELES, CA 90009-2960

10 August 1989

**TO: ALL INTERESTED GOVERNMENT AGENCIES, PUBLIC GROUPS, AND
INDIVIDUALS**

The dates for the Space Launch Complex 7 Draft Environmental Impact Statement (EIS) public hearing announced in the July 21, 1989 letter from Deputy Assistant Secretary Vest that was inserted in the Draft EIS have been changed from August 23 and 24, 1989. The new dates and locations are:

1. August 30, 1989, 7:00 p.m.
Grossman Gallery of the Lompoc Public Library
501 East North Avenue
Lompoc, California
2. August 31, 1989, 7:00 p.m.
Santa Barbara Superintendent of Schools Auditorium
4400 Cathedral Oaks Road
Santa Barbara, California


WILLIAM E. LEONHARD, JR., COL, USAF
Director Acquisition Civil Engineering

7.5 NEWSPAPER NOTIFICATION OF DRAFT EIS PUBLIC HEARINGS

7.6 NEWSPAPER PUBLICATION DATES OF DRAFT EIS PUBLIC HEARINGS

NEWSPAPER PUBLICATION DATES OF DRAFT EIS PUBLIC HEARINGS

The USAF Public Notice* of the Public Hearings for the proposed SLC-7 project at Vandenberg Air Force Base appeared in the following newspapers:

- *Lompoc Record*
 - August 13, 1989
 - August 22, 1989
 - August 29, 1989
- *San Luis Obispo County Telegram-Tribune*
 - August 19, 1989
- *Santa Barbara News-Press*
 - August 13, 1989
 - August 22, 1989
 - August 29, 1989
- *Santa Maria Times*
 - August 13, 1989
 - August 22, 1989
 - August 29, 1989
- *Ventura County Star Free Press*
 - August 13, 1989
 - August 22, 1989
 - August 29, 1989

*See Section 7.5 for example of published notice.

7.7 PUBLIC HEARING SUMMARY HANDOUT

PUBLIC HEARING**DEPARTMENT OF THE AIR FORCE
SYSTEMS COMMAND****SPACE LAUNCH COMPLEX 7
DRAFT EIS
VANDENBERG AIR FORCE BASE, CALIFORNIA**

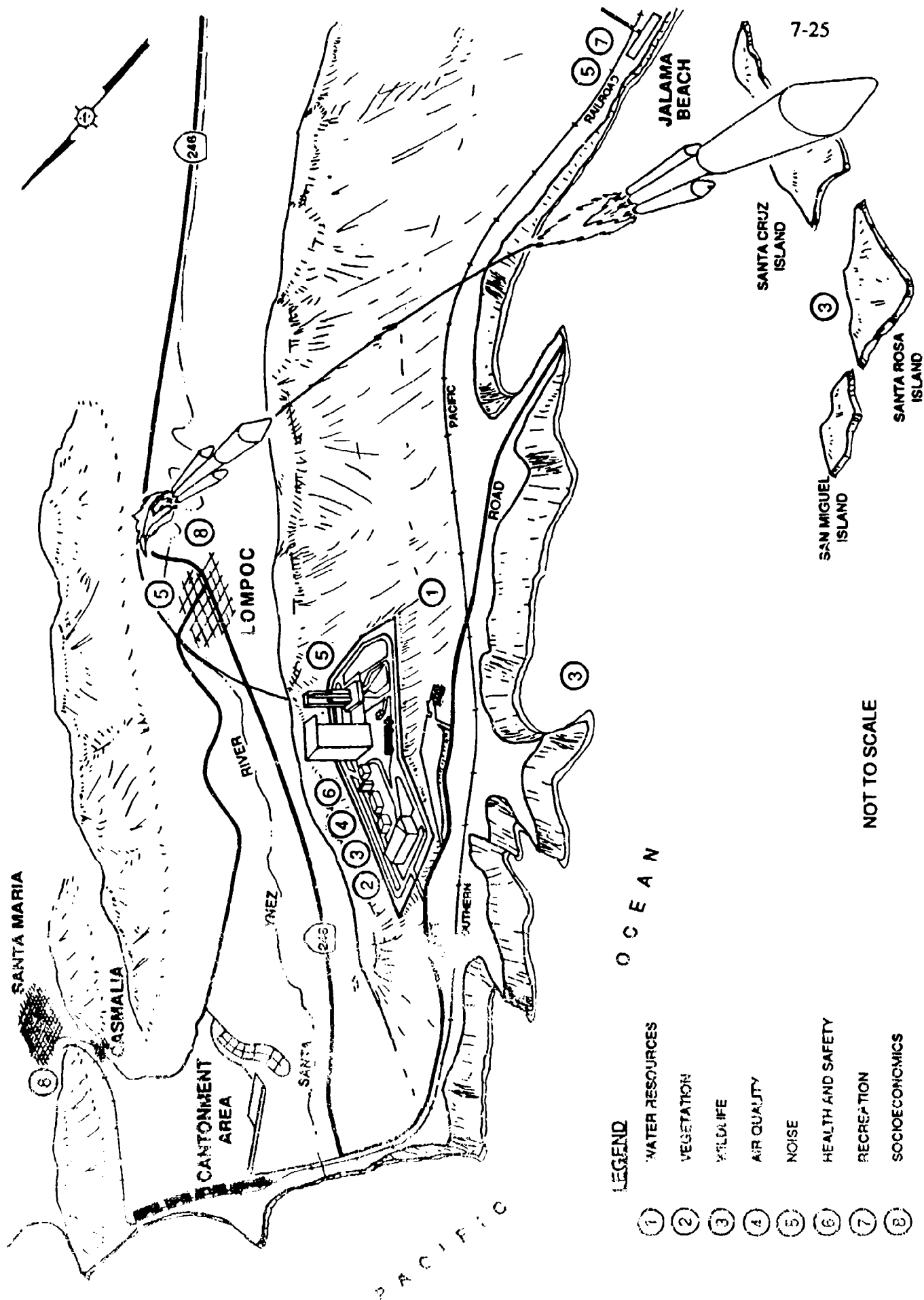
This meeting is one of two being held in the Santa Barbara area to solicit comments from community interest groups, individuals, elected officials, and governmental agencies on the adequacy and completeness of the Draft Environmental Impact Statement (EIS) prepared to address the potential environmental consequences of the proposed Space Launch Complex 7 project. The project would involve construction and operation of a space vehicle launch complex at Vandenberg Air Force Base in northwestern Santa Barbara County, California. A summary of the Draft EIS that describes the proposed action, its potential environmental impact, and mitigation measures is available at this meeting.

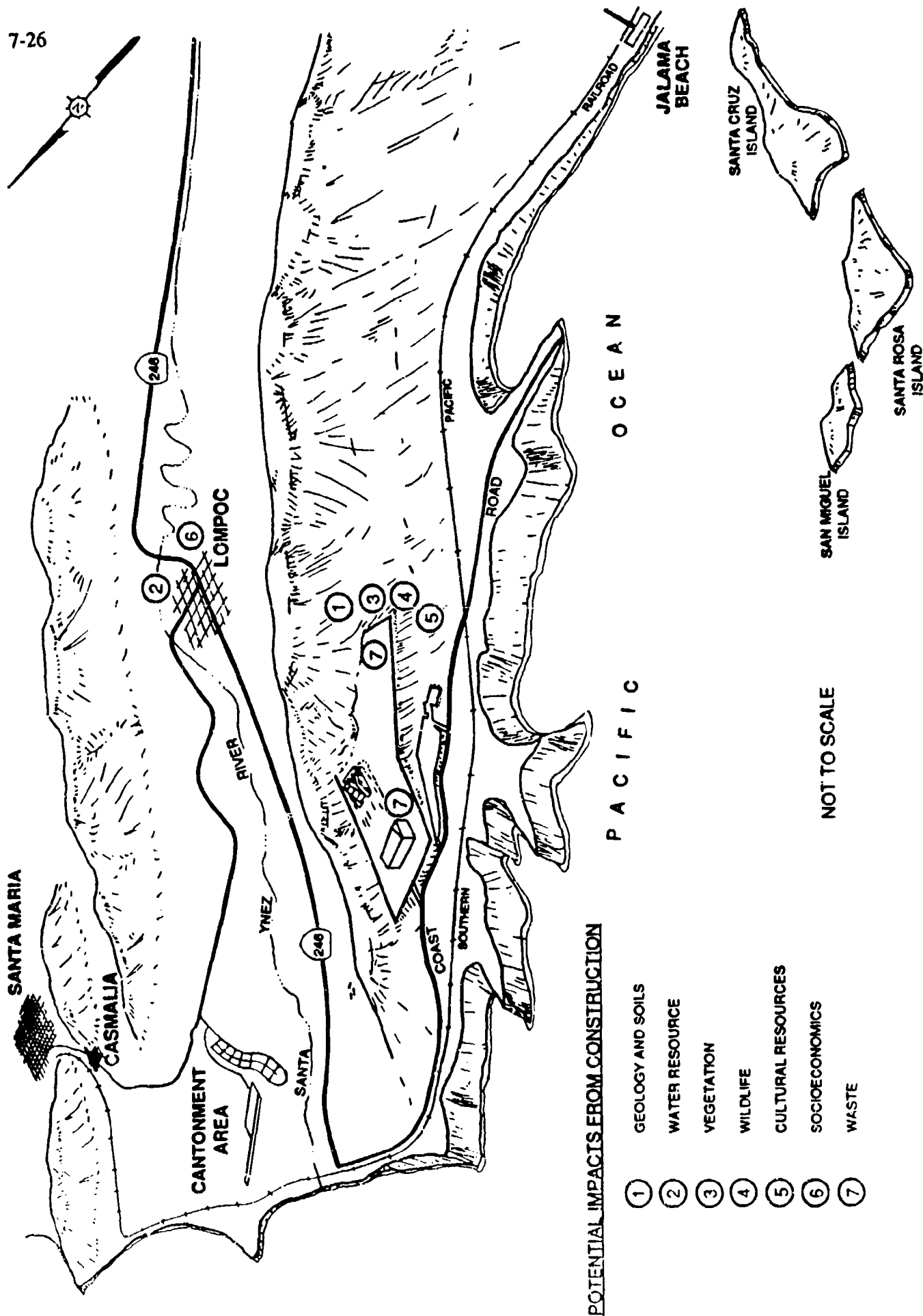
Those who desire to comment on the Draft EIS may do so by completing the **SPEAKER'S CARD** and presenting it to a U.S. Air Force representative. In order to be sure there is time available for all persons who wish to comment, appropriate time limits will be announced during the meeting. Verbal comments of considerable length should also be submitted in writing, either to an Air Force representative at the meeting or to the Department of the Air Force, Headquarters Space Systems Division/DEV, Attention: Mr. John Edwards, Post Office Box 92960, Los Angeles, California 90009-2960. In order to receive full consideration, written comments should be received by the Air Force on or before September 11, 1989.

The proposed Space Launch Complex 7 project is subject to environmental review in compliance with the National Environmental Policy Act, as implemented by the regulations of the President's Council on Environmental Quality (CEQ). The CEQ regulations direct Federal agencies which have made a decision to prepare an EIS to engage in a public review process. The purposes of this public review process are to share expertise, disclose agency analyses, and check for accuracy of the draft environmental document.

Following review of the Draft document, a Final EIS will be prepared and made available for a 30-day public review period. It is anticipated that the Final EIS for this project will be completed and released for review early in 1990. The Final EIS will reflect the oral comments received at the two public hearings and written comments submitted during the public review period.

Thank you for your attendance and participation.





7.8 PUBLIC HEARING REGISTRATION CARD

UNITED STATES AIR FORCE
ENVIRONMENTAL IMPACT ANALYSIS PROCESS
PROPOSED TITAN IV/CENTAUR SPACE LAUNCH COMPLEX 7

PUBLIC HEARING REGISTRATION CARD

(Please Print Clearly)

Name: _____

Address: _____

City: _____ State, Zip: _____

Affiliation: _____

Area of Environmental Concern: _____

☐ I would like to make
a statement

☐ Please send me a copy
of the Draft EIS

☐ Please send me a copy
of the Final EIS

So that all who wish to speak may be heard, individuals should
limit statements to 5 minutes; group/organization representatives
should limit statements to 10 minutes. Thank you.

PLEASE GIVE THIS CARD TO AIR FORCE REPRESENTATIVE

7.9 WRITTEN STATEMENT FORM

WRITTEN STATEMENT

**U. S. Air Force Proposed Titan IV/Centaur Launch Complex 7
Vandenberg Air Force Base, California**

[illegible]

Submitted by

Name: _____

Address: _____

Submit to: Attn Mr. John Edwards
HQ SSD/DEV
P. O. Box 92960

Los Angeles, CA 90009-2960

Comments must be received no later than Sept. 11, 1989.

7.10 DRAFT EIS PUBLIC HEARINGS ATTENDANCE AND SPEAKERS LISTS

DRAFT EIS PUBLIC HEARING ATTENDANCE

The following individuals attended the Public Hearings:

AUGUST 30, 1989
LOMPOC, CALIFORNIA

George Armenta
Larry Austin
Sarah H. Berry
Harry Bernard
Chuck Bolcom
Edmund Burke
Thomas C. Calkins
Bess Christensen
Greg Cooper
Steve Cresswell
Ray Fincham
Patricia M. Fresh
Vince Gomez
Howard E. Grantz
Jeremy Graves
Robert Hardaway
Weldon Hobbs
Charles Hutchison
Anthony R. Kent
Constance Kent
George La Combe
Jess Leyva
R. Lillard
Mike McClure
Mike McElligott
Michael W. Milligan
Andrew Mills
W. S. Mullins
Larry R. Nelson
Reggie Pagaling
Diane Paszek
J. C. Picciuolo
Tony Roberts
Allen Schauffler
Elaine M. Schneider
Sandra Schweiger
Joan Scolari
Le Roy Scolari
Aubrey B. Sloan
Donald D. Smith
James Spellman, Jr.
Steen Steensen
Steve Tuoly
Tad Weber
Dorene Welck
Roger Zimmerman

AUGUST 31, 1989
SANTA BARBARA, CALIFORNIA

Donald M. Benn
Scott Blankenship
Tom Demery
John Hankins
Michael Haro
Karen Kivela
Larry Liles
M. J. McDermott
Andrew Mills
Larry R. Nelson
Reggie Pagaling
Richard Proctor
Elaine M. Schneider
William Sobczyk
K. R. Taylor
Lisa Weetman

DRAFT EIS PUBLIC HEARING SPEAKERS

The following individuals presented oral statements at the meetings:

AUGUST 30, 1989
LOMPOC, CALIFORNIA

SPEAKERS

Howard Grantz, President
Vandenberg Village Community Services
Vandenberg Village, CA

James Spellman, Jr.
National Space Society
VAFB, CA

W. S. Mullins
Lompoc, CA

Le Roy Scolari, Rancher
Lompoc, CA

Jeremy Graves, Associate Planner
Lompoc Community Development
Department
Lompoc, CA

Elaine Schneider, Representative
Chumash Cultural Heritage Association
Santa Ynez Indian Reservation, CA

AUGUST 31, 1989
SANTA BARBARA, CALIFORNIA

SPEAKER

Reggie Pagaling
Chumash Cultural Heritage Association
Santa Ynez Indian Reservation, CA

CONCERNS

Impacts to Lompoc Plane and Lompoc
Uplands Aquifers, and adequacy of
community water supplies.

Possibility of using SLC-4, and Shuttle C as
another alternative.

Mitigation measures for water resources, and
AF purchase of domestic versus foreign
products.

Impacts on lands east of the project site.

Written comments to be provided prior to end
of comment period.

Preference for use of SLC-6, and impacts to
the Chumash 'Gate to the World Beyond.'

CONCERNS

Further development on VAFB, and
preference for use of SLC-6.



8.0 LIST OF ABBREVIATIONS

1STRAD	First Strategic Aerospace Division
ACHP	Advisory Council on Historic Preservation (Federal)
AFB	Air Force Base
AFM	Air Force Manual
AFR	Air Force Regulations
AFS	Air Force Station
AFSC	Air Force Systems Command
Al ₂ O ₃	Aluminum Oxide
ANSI	American National Standards Institute
AOU	American Ornithologists Union
AQAP	Air Quality Attainment Plan
AQIA	Air Quality Impact Analysis
ATC	Authority to Construct
BACT	Best Available Control Technology
C	Centigrade
CAAQS	California Ambient Air Quality Standards
CAP	Collection Accumulation Point
CARB	California Air Resources Board
CCAFS	Cape Canaveral Air Force Station
CCC	California Coastal Commission
CCR	California Code of Regulations
CDFG	California Department of Fish and Game
CDOHS	California Department of Health Services
CDWR	California Department of Water Resources
CEQ	Council on Environmental Quality
CEQA	California Environmental Quality Act
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act
CESA	California Endangered Species Act
CFC	Chlorofluorocarbon
CFR	Code of Federal Regulations
cfs	Cubic feet per second

CH ₄	Methane
CHP	California Highway Patrol
CNDDDB	California Natural Diversity Data Base
CNEL	Community Noise Equivalent Level
CNPS	California Native Plant Society
CO ₂	Carbon Dioxide
CO	Carbon Monoxide
CRWQCB	California Regional Water Quality Control Board
CSBRMD	County of Santa Barbara Resource Management Department
CY	Cubic Yards
dB	Decibels
dBA	Decibels (A-Weighted Sound Level)
DOD	Department of Defense
DOE	Department of Energy
DOT	Department of Transportation
DOHS	Department of Health Services
EA	Environmental Assessment
EIAP	Environmental Impact Analysis Process
EIR	Environmental Impact Report
EIS	Environmental Impact Statement
EPA	Environmental Protection Agency
ESA	Endangered Species Act (Federal)
ESMC	Eastern Space and Missile Center
ETR	Eastern Test Range
F	Fahrenheit
FEIS	Final Environmental Impact Statement
FPA	Flight Plan Approval
FTSA	Flight Termination System Approval
FVIS	Fuel Vapor Incinerator System
FVSS	Fuel Vapor Scrubber System

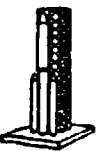
GN ₂	Nitrogen Gas
gpd	Gallons per day
gpm	Gallons per minute
HC	Hydrocarbon
H ₂ O	Water
HCl	Hydrogen Chloride
HSWA	Hazardous and Solid Waste Amendments
HWTP	Hazardous Wastewater Treatment Plant
Hz	Hertz
ICBM	Intercontinental Ballistic Missile
ICC	Ice Suppression System
ICU	Intersection Capacity Utilization
ILC	Initial Launch Capability
IRP	Installation Restoration Program
km	Kilometers
kV	Kilovolt
kVA	Kilovolt-ampere
LCC	Launch Control Center
LCC	Launch Check-out Center
LCP	Local Coastal Plan
LD	Launch Exhaust Ducts
L _{eq}	Equivalent Sound Level
LH ₂	Liquid Hydrogen
LM	Launch Mount
L _{max}	Maximum Sound Level
LN	Liquid Nitrogen
LO ₂	Liquid Oxygen
LOS	Level of Service
LSS	Launch Support Structure

M	Earthquake Magnitude
MCL	Maximum Contamination Levels
Mg/L	Milligrams per liter
mg/m ³	Milligrams per cubic meter
mm	Millimeters
MMPA	Marine Mammal Protection Act
MOL	Manned Orbital Laboratory
mph	Miles per hour
Ms	Surface Wave Magnitude
MSGSA	Missile System Ground Safety Approval
MST	Mobile Service Tower
MVA	Megavolt-ampere
N ₂ O ₄	Nitrogen Tetroxide
NAAQS	National Ambient Air Quality Standards
NASA	National Aeronautics and Space Administration
NCP	National Contingency Plan
NDIR	Non-Dispersive Infrared Spectroscopy
NEPA	National Environmental Policy Act
NFPA/NFC	National Fire Protection Association/National Fire Codes
NHPA	National Historic Preservation Act
NIPDWR	National Interim Primary Drinking Water Regulations
NMFS	National Marine Fisheries Service
NO ₂	Nitrogen Dioxide
NOAA	National Oceanic and Atmospheric Administration
NO _x	Nitrous Oxide
NPDES	National Pollution Discharge Elimination System
NPPA	Native Plant Protection Act
NRHP	National Register of Historic Places
NSR	New Source Review
NUS	No Upper Stage

O ₃	Ozone
OAL	Operations Approval Letter
OSC	On-Scene Coordinator
OSB	Operations Support Building
OSHA	Occupational Safety and Health Administration
PCBs	Polychlorinated Biphenyls
PCR	Payload Changeout Room
PGA	Peak Ground Acceleration
PG&E	Pacific Gas and Electric Company
PLF	Payload Fairing
PM ₁₀	Particulate matter less than 10 microns aerodynamic diameter
POTW	Publicly-owned treatment works
POVs	Privately-owned vehicles
ppm	Parts per million
PPR	Payload Processing Room
PSD	Preventative Source Determination
psf	Pounds per square foot
psi	Pounds per square inch
PTO	Permit to Operate
QD	Quantity-Distance Criteria
RCRA	Resource Conservation and Recovery Act
REEDM	Rocket Exhaust Effluent Dispersion Model
ROC	Reactive Organic Compounds
RSV	Ready Storage Vessel
RWQCB	Regional Water Quality Control Board
SAB	Shuttle Assembly Building
SAC	Strategic Air Command
SAMTO	Space and Missile Test Organization
SARA	Superfund Amendment and Reauthorization Act
SBCAPCD	Santa Barbara County Air Pollution Control District
SBCCAPC	Santa Barbara County Cities Area Planning Council
SC	Sandy clay

SSD/DEV	Space Systems Division/Division of Environmental Planning
SENEL	Single Event Noise Exposure Level
SHPO	State Historic Preservation Officer
SIP	State Implementation Plan
SLAMS	State and Local Air Monitoring Stations
SLC-4, -6, -7	Space Launch Complex 4, 6, 7
SLC-4E	Space Launch Complex 4 East
SLC-4W	Space Launch Complex 4 West
SM	Silty Sand
SMSA	Standard Metropolitan Statistical Area
SO ₂	Sulfur Dioxide
SO _x	Sulfur Oxide
SP	Poorly graded sand with gravel
SPA	Statement of Program Acceptance
SPEGL	Short-term Public Emergency Guidance Level
SPL	Sound Pressure Level
SPR	Spill Prevention and Response
SRMUs	Solid Rocket Motor Upgrades
STRAD	Strategic Aerospace Division
STS	Space Transportation System
SV	Satellite Vehicle
THC	Toxic Hazard Corridor
TNT	Trinitrotoluene
TOG	Total Organic Gases
TPCA	Toxic Pits Control Act
TPY	Tons Per Year
TSP	Total Suspended Particulates
UCSB	University of California, Santa Barbara
UDMH	Unsymmetrical dimethyl hydrazine
US EPA	United States Environmental Protection Agency
USAF	United States Air Force
USC	University of Southern California

USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey
UST	Underground Storage Tank
UT	Umbilical Tower
VAB/HTF	Vehicle Assembly Building/Horizontal Test Facility
VAFB	Vandenberg Air Force Base
WINDS	Weather Information Network and Display System
WSMC	Western Space and Missile Center
WTR	Western Test Range
µg/L	Micrograms per liter
µg/m ³	Micrograms per cubic meter



APPENDIX A

GLOBAL WARMING

1. Global climate could be impacted by emissions from rocket exhaust associated with the proposed construction and operation of Space Launch Complex 7 (SLC-7) at Vandenberg Air Force Base (VAFB). An analytical evaluation of emissions from Titan IV/Centaur launches at the proposed SLC-7 has been performed to determine if launch-related emissions would be expected to contribute significantly to global climate changes (global warming). This section describes the technical basis for global warming and estimates the potential effects of Titan IV/Centaur launches at SLC-7 upon global climate.

A.1 BACKGROUND

1. Recent climatological research suggests that the temperature of the lower atmosphere is rising because of the atmospheric buildup of trace gases which absorb heat. These gases are termed "greenhouse gases" because they allow visible and ultraviolet light (shortwave radiation) to pass through the atmosphere and heat the earth's surface. This heat is re-radiated from the earth's surface in the form of infrared energy (longwave radiation) and is partially absorbed by the greenhouse gases before it escapes into space.
2. The greenhouse gases are vitally important for life. It has been estimated that without the greenhouse effect, the earth's surface would be approximately 33° C (59° F) colder than it is today, too cold to support life as we know it (Abrahamson 1989). Five naturally occurring atmospheric gases are responsible for earth's greenhouse effect: carbon dioxide (CO₂), tropospheric ozone (O₃), methane (CH₄), nitrous oxide (N₂O), and water vapor (H₂O).
3. The concentrations of CO₂, O₃, CH₄, N₂O, and H₂O have been increasing over the past 100 years due to increased levels of human activities such as fossil fuel combustion and deforestation. Additional greenhouse gases such as chlorinated fluorocarbons (CFCs) have been added to the atmosphere over the last 30 years (Ozone Trends Panel 1988). Stratospheric ozone, which absorbs sunlight before it reaches the earth's surface, has recently been noted to have been decreasing in concentration during the past twenty years. This depletion contributes to global warming because it allows more shortwave radiation to enter the earth's atmosphere, thus contributing to more infrared energy being trapped in the lower atmosphere by the greenhouse gases.

4. On the basis of available climatological data, researchers have determined that the global average temperature has increased by approximately 0.6°C (1°F) over the last 100 years (Hansen 1987). During the same period, atmospheric concentrations of CO_2 have risen from approximately 280 parts per million (ppm) a hundred years ago to 350 ppm today (MacDonald 1989). Atmospheric concentrations of CH_4 have doubled during the last 100 years, and the other greenhouse gases have been noted to be increasing at rates from 0.2 to 5 percent per year.
5. The atmosphere is presently estimated to contain approximately 700 billion tons of CO_2 (Woodwell 1989). CO_2 is emitted to the atmosphere by fossil fuels combustion, the effects of deforestation, and the respiration products of photosynthesis, while CO_2 is removed from the atmosphere by the oceans and photosynthesis. Given the present rate of fossil fuels combustion and deforestation, the combined effect of increases in atmospheric concentrations of each of the greenhouse gases over the next fifty years has been estimated by some researchers to be equivalent to a doubling of present concentrations of CO_2 (California Energy Commission 1989). Researchers note that, during the next fifty years, atmospheric concentrations of CO_2 may increase at a rate of 1.5 ppm per year to approximately 450 ppm by the year 2030 (Ramanathan et al. 1985). Atmospheric scientists, with the aid of global climatological models have estimated that, as a result of the predicted increase in atmospheric CO_2 concentrations, global temperatures between the equator and 50° latitude (northern and southern hemispheres) may increase at the rate of 0.06°C per year to approximately 3°C by the year 2030 (Schlesinger and Mitchell 1985). The temperature increase in polar regions (60° latitude) may be up to two times higher, or approximately 6°C (Brasseur and Solomon 1986).
6. If estimates of global temperature increase over the next 50 to 100 years are correct, researchers have determined that significant environmental consequences may result, including but not limited to glacial melting, rising ocean levels, loss of coastal and delta wetland habitat, decrease in drinking and irrigation water supplies, increased demand for electrical energy, increased urban air pollution problems, and deforestation.

A.2 SLC-7 CONTRIBUTION TO GLOBAL CO_2 EMISSIONS

1. The exhaust products emitted from a single Titan IV/Centaur launch vehicle are listed in Table 4.5.6 of the Draft EIS. From this table, a Titan IV/Centaur launch vehicle would emit approximately 44 tons of CO_2 . Assuming three Titan IV/Centaur launches per year, SLC-7 launches would emit approximately 132 tons of CO_2 per year. Air contaminant emissions

anticipated from normal launch support activities at SLC-7 are presented in Table 4.5.1 of the Draft EIS. On the basis of fuel consumption information presented in this table, it may be estimated that SLC-7 launch support activities would result in the emission of 1104 tons of CO₂ per year. Thus, total CO₂ emissions from SLC-7 are anticipated to be 1,236 tons per year. When compared with present global emissions of CO₂ from the combustion of fossil fuels (approximately 5.5 billion tons per year), SLC-7 operations would increase current global CO₂ emissions by approximately twenty-three millionths of one percent in one year.

2. As noted above, depletion of the earth's stratospheric ozone layer is expected to contribute to global warming. No significant depletion of the stratospheric ozone layer, however, is expected as a result of exhaust products from Titan IV/Centaur launches at the proposed SLC-7. This topic is discussed in detail in Section 4.5.4, Stratospheric Ozone, of the Draft EIS.

A.3 ENVIRONMENTAL CONSEQUENCES OF SLC-7 OPERATIONS

1. Due to the complexity of global climate modeling, a simplified analytical approach was undertaken that scaled data regarding existing CO₂ levels and anticipated global CO₂ buildup and temperature increase rates. Other greenhouse gases emitted by SLC-7 operations, including gases that may contribute to depletion of the stratospheric ozone, layer were not considered in this analysis. This is because of the complexity of modeling their interrelated impacts and the primary importance of CO₂ emissions to global warming, due to the abundance of CO₂ emissions with respect to the other greenhouse gases. This macro approach omits detailed spatial, temporal, and climatological processes that would be undertaken in large scale computer analyses, but is conservative enough to reasonably estimate potential effects.
2. Researchers have estimated that an accumulation of approximately 3 billion tons per year of excess CO₂ in the earth's atmosphere could be responsible for a global temperature increase of approximately 0.06° C per year during the next 50 to 100 years at 50° latitude (Woodwell 1989), or 0.12° C per year at 60° latitude (Brasseur and Solomon 1986). The potential environmental consequences of Titan IV/Centaur launches from SLC-7 with respect to global warming were assumed to be proportional to the ratio of estimated global temperature increase and global accumulation of CO₂. On the basis of this assumption, total estimated CO₂ emissions from SLC-7 during a year of operations (see Section A.2) were estimated to result in a global temperature increase of $2.5 \times 10^{-8}^{\circ}$ C at 50° latitude, or $5.0 \times 10^{-8}^{\circ}$ C at 60° latitude.

3. Assuming that present atmospheric levels of CO₂ are expected to double during the next fifty years, resulting in a global temperature increase of 6° C at 60° latitude (see Section A.1), and an estimated SLC-7 project life of 25 years, SLC-7 would be expected to contribute to a temperature increase of approximately 1.3×10^{-7} ° C at 60° latitude. As mentioned earlier, 60° latitude corresponds to earth's polar regions where the greatest environmental consequences due to global warming (i.e., glacial melting) would be expected to occur. On the basis of these analyses, it is considered that emissions of greenhouse gases from Titan IV/Centaur launches at the proposed SLC-7 would not contribute significantly to global warming.

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